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NEW INTERNATIONAL WHEAT AGREEMENT

Once again the International Wheat Agreement has been extended—for a three-year period running to July 31, 1962. Only one senator voted against this extension: the vote was 92 to 1.

Some 30 wheat-importing countries have agreed to buy on the average of 70 percent of their commercial wheat imports from nine exporting countries including the United States, Canada, France, Australia, Uruguay, Italy, Mexico, Spain and Sweden. For the years 1954-1958, about 600 million bushels of wheat were sold annually under this agreement. On this basis, the United States will export slightly over 150 million bushels a year for the extended three-year period.

Prices are set within a $1.50 to $1.90 a bushel range, in terms of basic grade, No. 1 Manitoba Northern, at a basic point at the head of the Great Lakes in Canada. A recent Canadian quotation (converted to U. S. funds) was $1.70. This is 20 cents below the maximum in the agreement.

Within the United States, the CCC makes wheat available under the agreement. The program is coordinated with other CCC programs, and funds are used to pay subsidies to wheat exporters. The exporter buys at market price in the United States and sells at the world price. The CCC then pays the exporter a subsidy in negotiable certificates which are redeemable in wheat from CCC stocks. This wheat in turn must be used for further exports under the program. Export subsidy payments average 55 to 60 cents a bushel.

Since a large part of our wheat crop is placed under the price-support program and stored, the wheat agreement is helpful in at least avoiding the storage cost. But either way it costs the government—for price support or for export subsidy.

H. W. Hannah and *N. G. Krausz*

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The Farmer's Digest

Volume 24 February, 1961 Number 8

Barnyard Economics

Machines, too, play an important part in farm management. Plan your machinery program using this article as a guide . . .

Condensed from The Feed Lot News

Francis Kutish, Agricultural Extension Economist, Iowa State University

ONE of the questions that every farmer faces is that of deciding whether he should buy a particular machine.

Important among the factors that have brought about the rise in economic efficiency in farming has been the increase in use of farm machinery.

Easier Farming

Farm machinery not only makes for more efficient farming operations, but it makes for easier and more timely farming. It makes for easier farming in the sense that it relieves much of the physical work of the farm operator. And certainly the use of machinery has made it possible for people to get their field work done under adverse conditions such as never would have been possible in the days of horse equipment.

However, the increasing amount of money necessary to operate a farm today means that success in farming depends more and more on correct decisions as to how to spend and invest money. And since machinery is one of the important items involved here, the question of whether or not to buy machinery has become a stumbling block on which many farmers have tripped themselves.

The decision of whether or not to buy a particular machine should be based on an analysis of what that machine would cost

Reprinted by permission from The Feed Lot News, Walnut Grove Products Co., Inc., Atlantic, Iowa

and what the returns would be from that machine, for it is possible with most farming operations today to hire work done by custom operators.

Also, it is possible to hire some labor in this way that might not be available otherwise. Some farmers use hired custom work as a means for hiring extra labor during harvesting operations—labor which could not otherwise be hired.

But regardless of the question of hiring labor, the analysis of whether or not to buy a machine should be based on the number of hours that it will be used.

First Step

The first step in determining the annual cost of owning a piece of harvesting equipment is to determine the number of hours per acre the machine will be used. You do this by taking the width of the harvester in feet and multiplying it times the speed in miles per hour. Divide this by 10 and you get the number of acres covered per hour.

Harvester Width in Feet × Speed in MPH ÷ 10 = Acres Per Hour.

Next, you must determine the cost of fuel per hour for the auxiliary power unit. Belt horsepower of the power unit should be determined. Multiply this by .8. The results of this should be multiplied times the price per gallon of fuel and then divide by 10 to get the fuel cost per hour.

(Belt H. P. × .8) × Fuel Price Per Gal. ÷ 10 = Fuel Cost Per Hour.

Next you determine the number of acres that will be covered annually by the machine.

Then divide the number of acres the machine will be operated per year by the number of acres covered per hour as was calculated earlier. This will give you the number of hours that you will operate this machine per year.

Number of Acres Per Year ÷ Number of Acres Per Hour = Hours Per Year.

Next take the cost of the machine including accessories. You are now ready to determine the annual cost of the operation. To

The best way to get more out of life is to put more into it.

get the figure on depreciation and repairs, take the new cost of the machine (including accessories) and multiply it times 12 percent.

Machine Cost × .12 = Depreciation & Repair Per Year.

The fuel cost of the auxiliary power unit, per hour, has already been calculated. Take this figure and multiply it times the hours per year. Then figure the fuel cost per hour of tractor power and multiply it times the hours

per year the tractor is used with the harvester.

Hrs. Per Year × Aux. Fuel Cost Per Hr. = Fuel Cost of Aux. Power Per Year.

Hrs. Per Yr. × Tractor Fuel Cost Per Hr. = Fuel Cost of Tractor Power Per Yr.

Now you have to calculate the overhead cost of the tractor which is the number of hours the machine will be operated, multiplied by 25 cents. The cost of the machine times 3 percent gives you the interest on investment. The additional labor needed to operate will be calculated in the form of multiplying the number of hours the machine is operated per year times $1.00 per hour.

Hours Tractor Operated × .25 = Overhead Cost.

Machine Cost × .03 = Interest On Investment.

No. of Hrs. Machine Operated × $1.00 = Added Labor Cost.

Total these figures (1. Depreciation and repairs; 2. Fuel Cost of Auxiliary Power per year; 3. Fuel Cost of tractor power per year; 4. Overhead cost; 5. Interest on investment; and 6. Additional labor needed) and you get the annual cost of ownership.

Now you compare this total cost with your alternative of hiring a machine to do the job (number of acres times custom rate per acre). The difference between the ownership figures and the custom hiring costs will give you the advantage or disadvantage of owning this harvester.

Liquid, Dry Fertilizers Equal

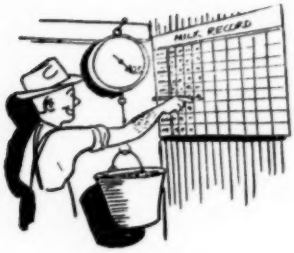
Liquid fertilizers are as good as dry ones.

Regardless of the form of fertilizer, if enough plant nutrients were added to meet soil test requirements, yields increased in a two-year test conducted by A. L. Lang, University of Illinois agronomist.

The type of fertilizer to use depends on (1) how well it fits the field and crop's needs, (2) how convenient it is to handle and apply and (3) what it costs per unit of plant nutrients. Liquid fertilizers seem to be just as good as, but no better than, other fertilizers, Lang said.

Corn receiving starter fertilizer made more early growth than corn receiving only the broadcast fertilizer. However, the amount of early growth was about the same for liquid and dry starters. The beginning growth encouraged by the starters did not greatly increase yields. —*Illinois Research*

Cost Of Producing Milk



This New York study gives some answers to help you plan your dairy business . . .

Condensed from Farm Economics

L. C. Cunningham

HOW much does it cost to produce milk? How do unit costs vary from farm to farm? What is the relation of unit costs to the price of milk, and to net income?

Answers to these questions are provided by the results of a study of a 10 per cent random sample of all commercial dairy farms located in the Plateau region of New York. This region extends across southern New York from Delaware County to the western edge of the State, and includes all or parts of 21 counties. Nearly 40 per cent of all dairy farms in the State are located within its boundaries.

The data are for the 12-month period ended April 30, 1958. This period covered the 1957 crop season and the following winter feeding season. The survey method was used to obtain the information.

Description of the Farms

Herd size averaged 27 cows per farm on hill farms and 31 cows on valley farms in the region. The average amount of milk sold per cow was 7,568 pounds and 8,078 pounds, respectively. Milk sales accounted for about 75 per cent of the total receipts. Practically all of the crop production was feed for the cattle. The region was largely self-sufficient with respect to roughage, but only about one-fourth of the grain fed was raised. Most of the herd replacements were home raised.

Average Cost

On hill farms, the total costs including operating expenses, interest on capital and value of operators' labor amounted to about $13,700 per farm. A rate of $2,400 per year was used as the value of operator labor. Income other than from milk was about $3,500. The total cost min-

Reprinted from Farm Economics, Cornell University, Ithaca, New York

us this non-milk income was $10,197. This amount divided by the quantity of milk sold gave an average cost of $4.94 per 100 pounds, or 10.6 cents per quart. On valley farms the average cost was $4.50 per 100 pounds, or 9.7 cents per quart (table 1).

These costs are calculated on a "whole farm" basis. Farm-produced items such as hay are not charged directly at market prices but indirectly through the labor, machinery, fertilizer and other items used to produce them. Any profits or losses from the supplementary enterprises are merged into those of the major enterprise —milk. Cost allocations for such things as building are avoided. Where farms are specialized in milk production, as in this region, the whole farm cost method is perhaps more meaningful than the enterprise method.

TABLE 1.—AVERAGE COST OF PRODUCING 100 POUNDS OF MILK, WHOLE FARM BASIS

823 Hill Farms and 252 Valley Farms, Plateau Region, New York
1957-58

Items	Average per farm	
	Hill Farms	Valley Farms
Pounds of milk sold*	206,425	246,738
Total farm expenses	$9,513	$10,445
Interest on total capital	1,606	1,981
Labor of operators	2,584	2,562
Total costs	$13,703	$14,988
Total farm receipts	$12,959	$15,301
Milk sales	9,453	11,410
Other income	$ 3,506	$ 3,891
Total costs less other income	$10,197	$11,097
	Average per 100 pounds of milk	
Cost of milk sold	$4.94	$4.50

*3.7 percent butterfat basis.

Variation in Unit Costs

Unit costs of producing milk varied widely from farm to farm. On hill farms, for example, costs were less than $3.50 per 100 pounds on eight per cent of the farms, and ranged from $3.50 to $4.49 on another 24 per cent of the farms. In contrast, costs were $7.50 or more on 14 per cent of the farms and ranged from $6.50 to $7.49 on another 8 per cent (table 2).

Likewise, on valley farms, about one farm in eight had costs of less than $3.50 per 100 pounds of milk, and one farm in ten had costs of at least $7.50. A larger proportion of the valley farms had costs under $4.50 than did the hill farms.

TABLE 2.—VARIATION IN THE COST OF PRODUCING 100 POUNDS OF MILK

823 Hill Farms and 252 Valley Farms, Plateau Region, New York 1957-58

Cost per 100 pounds of milk sold	Number of Farms		Percent of Farms	
	Hill	Valley	Hill	Valley
Less than $3.50	62	32	8	13
3.50 to 4.49	196	72	24	29
4.50 to 5.49	224	59	27	23
5.50 to 6.49	157	39	19	15
6.50 to 7.49	64	25	8	10
7.50 or more	120	25	14	10
Total	823	252	100	100

This wide variation in unit costs has two important implications. One is that tremendous progress in production efficiency has been made on some farms. The other is that because the milk supply appears adequate for the present and near future, even without the production from the high-cost farms, the decrease in number of dairy farms that has been going on since 1930 will continue unabated.

Percentage of Milk Produced At Specified Costs

On hill farms, 13 per cent of the milk sold was produced at a cost of less than $3.50 per 100 pounds, and 43 per cent at less than $4.50. On valley farms, these percentages were higher. In fact, on valley farms, 80 per cent of the milk was produced at a cost of less than $5.50 (table 3).

Cost A Measure of Efficiency

Unit cost of production is a composite measure of overall dairy farm efficiency. There are many facets of farm operation—

TABLE 3.—PERCENT OF MILK PRODUCED ON HILL AND VALLEY FARMS AT LESS THAN SPECIFIED COST

823 Hill Farms and 252 Valley Farms, Plateau Region, New York, 1957-58

Cost per 100 Pounds Less Than:	Percent of Total Milk	
	Hill Farms	Valley Farms
$3.50	13	20
4.50	43	61
5.50	73	80
6.50	89	92
7.50	94	97

crop production, use of labor, power and equipment, herd replacement, milk production, and the like—each of which may be judged by one or more tests. But all of these operations are reflected in the cost of producing 100 pounds of milk.

In this sense, the unit cost of milk is similar in usefulness to la-

bor income. Both are gauges of how well the business is operated. As will be shown later, there is a close inverse correlation between the two measures. A limitation of the cost measure, however, is the inclusion of an arbitrary wage allowance of $2,400 for each operator. Some farms are so small or otherwise inefficient that labor cannot and does not earn any such wage. This is the explanation of the very high unit costs on some farms. Labor income is, of course, affected by the price received for milk as well as by the cost of production.

A comparison of the cost with the price received shows whether the operators received more or less than the wage assigned, or more or less than the interest rate on capital used in the calculations. The labor income shows directly what the operator received for the year. The traditional use of cost as a criterion of price is of continuing interest, but such use is of less economic significance than as a measure of production efficiency.

Average Costs Compared With Prices for Milk and Labor Incomes

The $4.94 average cost of producing 100 pounds of milk was 36 cents higher than the price received for milk on hill farms. On valley farms, the $4.50 average cost was 12 cents lower than the price received:

On hill farms, the average labor income was about $1,700. Although the operator labor was figured in the cost at $2,400, actually only $1,700 was earned. On valley farms, the 12 cents per 100 pounds of milk of price over cost is reflected in the $2,658 average labor income—some $250 more than the $2,400 operator labor charge in the cost calculation.

Relation of Cost to Price and Income

Unit costs showed very little relation to average prices received for milk, but a strong inverse relation to income. With costs less than $3.50 per 100 pounds of milk, hill farms received an average price of $4.55 and made an average labor income of about $7,000, and valley farms received $4.66 and made about $8,700 (table 4). As costs rose, prices received for milk declined only a few cents but incomes fell sharply. Both hill and valley farms with high costs, $6.50 or more, incurred losses.

An individual dairyman can sometimes bargain for a few cents premium for his milk, and this

Items	Hill farms	Valley farms
Average cost per 100 pounds of milk	$4.94	$4.50
Average price per 100 pounds of milk	$4.58	$4.62
Average labor income	$1,703	$2,658

TABLE 4.—RELATION OF UNIT COST OF PRODUCING MILK TO PRICE RECEIVED AND TO LABOR INCOME

823 Hill Farms and 252 Valley Farms, Plateau Region, New York
1957-58

Cost per 100 Pounds of Milk Sold	Price per 100 Pounds of Milk Sold		Average Labor Income	
	Hill Farms	Valley Farms	Hill Farms	Valley Farms
Less than $3.50	$4.55	$4.66	$7,040	$8,730
3.50 to 4.49	4.57	4.62	3,930	4,640
4.50 to 5.49	4.57	4.60	1,580	1,810
5.50 to 6.49	4.51	4.52	220	−180
6.50 to 7.49	4.55	4.58	−450	−330
7.50 or more	4.43	4.50	−1,300	−1,390

helps to improve income. But cost reduction is by far the most important way to increase net income. Each 10 cents per 100 pounds reduction in cost increased, on the average, the labor income about $200 on hill farms, and $230 on valley farms during the year of these records.

L. C. Cunningham

Farrowing Stall Requirements

Farrowing stalls for sows will save pigs, labor, room and expense. The following are necessities for successful farrowing stalls!

1. Size is most important — nothing smaller than eight feet long and five feet wide overall is satisfactory, when sows and pigs are to be kept in the stall until weaning time. The space for the sows needs to be twenty-two to twenty-four inches wide, with the bottom side rail adjustable from 10 to 12 inches from the floor, to accommodate large or small sows. If one little pig area is made 16" wide, and the other 20", the wider one will allow easier placement of creep feeder and waterer.

2. Turning sows out of stalls twice a day, for lengthening periods of time as pigs grow older keeps sow manure and urine out of the stall, allows sows some exercise, and simplifies chores — one feeder and one waterer take care of from six to ten sows.

3. Leaving sows and litters in stalls until weaning makes litters do better, as there is no robbing or fighting.

4. Bedding is necessary in stalls, and ground cobs seem to be the most satisfactory. Stalls should have solid partitions at ground level to hold bedding. This also prevent drafts on little pigs.

—The Hormel Farmer

How Much Milk Can We Use By 1970?

A special dairy report by a farm economist looks to the future on our total use of milk . . .

Condensed from Wisconsin Agriculturist

Hugh Moore, Farm Economist,
Purdue University

WILL you be dairying in 1970? What about your neighbors?

A key factor to the numbers of dairy farms and dairy cows needed 10 years from now is the amount of milk the public will use.

Our population of 177 million people in 1959 consumed about 121.3 billion pounds of whole milk equivalent—683 pounds per person. We'll frequently use the term "whole milk equivalent." It means the amount of whole milk needed to supply the butterfat contained in the products.

During 1959, the nation's dairy cows produced an estimated 124.4 billion pounds of milk. For the most part, the difference between what was produced and consumed was either kept on farms as livestock feed or exported to other countries.

Factors That Will Push up Milk Use:

● Our present population of about 180 million is increasing nearly 3½ million persons per year. In 1970 we'll have an estimated 208 million people—an increase of about 18 percent.

But by 1970 a greater percentage of the people will be over 65. And we'll probably have a smaller percentage of the population under 18. Since oldsters drink less milk than youngsters, the amount of milk used per person is almost sure to go down, but the total amount used will be more.

● During the past 10 years the average per person real income —based on purchasing power— has gone up 22 percent. We can expect another boost during the 60's. Studies show that when consumers' real incomes go up 10 percent, they spend about 3 percent more for dairy products.

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● New uses for milk—such as sterile non-concentrated milk and acceptable whole milk powder—will probably up total milk consumption per person. But many of the new products are apt to contain more vegetable fats and less butterfat.

Factors That Will Push Down Milk Use:

● Today we use more vegetable fats in place of butterfat. Take margarine for example. Since World War II, frozen desserts with vegetable fats—called mellorine—have invaded the ice cream market. Mellorine is legally sold in 12 states.

In these areas sales have averaged one-fourth as much as ice cream sales. Undoubtedly the areas where mellorine can be sold will spread. Other substitutes are on the horizon.

● Our diet-conscious public is moving away from high fat foods. It has cut the per person use of butter and cream. People now buy less butter and cream, more skim milk and "two percent" milk instead of whole milk. Cheese consumption is showing new strength.

● Farm use of milk will decline during the 60's. We'll have fewer farms. Farm families tend to use more milk than city folks.

In the future, we'll need less milk to feed dairy calves. During the past 20 years fewer cows have been needed each year to supply our milk needs.

In 1970 we'll see about 14 percent fewer calves on farms. It will take about one-half billion pounds less milk to raise them.

No Change

Since there's no way of knowing what course government programs will take, this prediction assumes a program that creates the same impact on demand for milk as the one we now have.

Government buying in recent years has declined as milk production held steady.

In 1959 government purchased 766 million pounds of non-fat dried milk to support prices. This

Money may talk, but today's dollar doesn't have cents enough to say very much.

was nearly 7½ percent of all non-fat milk solids produced on farms. Most of the government purchases were shipped overseas.

In the future the problem of disposing of these solids will be complicated by a greater portion of the skim milk and buttermilk now on farms moving to market as whole milk.

The foreign trade picture for dairy products is not apt to change much in the 60's. Since World War II, imports have nev-

er exceeded ¾ percent of our own production.

In recent years our commercial dairy exports have amounted to slightly under 1 percent of our total milk supply.

This totals up to around 142.2 billion pounds of milk needed to meet our demands in 1970.

Utilizing the excess non-fat milk solids of this milk is almost sure to prove a real challenge in the years ahead.

Prices

Where will this put milk prices? Unless we develop a strong dairy support program, there's little chance that "real" farm milk prices will rise much above their present levels.

TOTAL USE OF MILK . . .

(WHOLE MILK EQUIVALENT)

	1959	1970 (Estimated)
DOMESTIC	121.3 BILLION LBS.	138.7 BILLION LBS.
NET EXPORT	.4 BILLION LBS.	1.0 BILLION LBS.
FED TO CALVES	2.8 BILLION LBS.	2.5 BILLION LBS.
TOTAL	124.5 BILLION LBS.	142.2 BILLION LBS.

Planning A Water System?

If the answer is yes, the first thing to do is figure out your daily water needs. Here are some rules of thumb to help you make these estimates.

Producing dairy cow	35 gal.
Hog	4 gal.
Steer	12 gal.
Horse	12 gal.
Dry cow	12 gal.
Sheep	2 gal.
100 layers	4 gal.
Person	50 gal.

When you have daily requirements and locations where water will be needed—power companies and plumbing contractors can give you pump size and location, pipe sizes and other information.

Dairymen: Do You Have To Work So Hard?

Consider these labor savers . . .

Condensed from The Progressive Farmer

Guy S. Parsons, North Carolina State College

THE smart dairyman is finding ways to take the "hand" out of handling.

To do that, you must stop lifting and carrying everything to and from your cows. You must stop carrying hay, silage, bedding, and milkers to the cows and milk and manure from them. Here are some points to consider:

HAY: Store it on the ground and let cows eat right out of storage. Ground-level hay storage sheds are gradually replacing burdensome and costly overhead storage set-ups. When you put hay overhead, each ton must be lifted and carried two extra times.

SILAGE: It can be stored on the ground and self-fed, too. This is being done successfully with trench and above-ground bunker silos. With a tower silo, you may want to consider a mechanical unloader that empties into a self-feeding bunk or onto a mechanized belt that moves silage to the cows. This can save you handling each ton of silage three times.

MILKERS: Let cows bring milk to the milkers. When they get there, let them stand up on a platform where you can work the easiest. Use a milking parlor with elevated stalls.

PIPELINES: Let pipelines carry the milk. With a pipeline putting milk into a bulk milk tank, instead of a dozen cans, you can cut out handling each pound of milk as many as five times. Is it necessary to carry 40,000 pounds when a cow gives 8,000 pounds a year?

GRAIN: When possible, have it over the milking parlor in a big bin. Gravity will bring it down to each feed manger. A metering device can be used to measure out the correct amount for each cow. This saves you handling each 100-pound bag of

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grain at least twice.

COWS: Your cows should be free to move. They should be housed loose in a pole-type loafing shed. This will save you the work of unstanchioning and restanchioning once or twice each day. Research shows cows produce just as much milk in loafing barns as in stanchion barns. You will probably have less hock and udder injuries, too.

CONCRETE: In a loose housing system, cows should have access to an outside paved lot. Concrete paving cuts down on mud and dirt around your milking parlor, lounging barns, hay feeders, and silage bunks. Mud and filth are carriers of two common and infectious diseases—mastitis and foot rot.

BEDDING: Store it on the ground level, preferably in the rear 10 feet of your loafing barn. You can't get bedding any closer to where you will be using it.

MANURE: In a pole-type loafing shed, you leave it where it falls—bedding it over each day until you are ready to move it out with power machinery. Then once or three times a year you clean out the bedding area and take manure directly to fields. Thus, instead of handling manure once or twice a day, it is done once or twice a year. In the meantime, it is kept under cover where value is preserved.

The dairyman of tomorrow will need to use his head to save his hands and perhaps his heart.

Disease Causes Most Abortions in Cattle

Most abortions in cattle are due to disease. Abortions due to injury are rare. Some of the more common causes are:

Brucellosis
Vibriosis
Leptospirosis
Trichomonasis
Nitrate poisoning
Chemical poisoning (such as lead)
Virus infections
Pneumonia

A number of diseases not on this list can also cause abortions. So when a cow aborts, it is wise to isolate her and determine the cause. This may let you catch an infectious disease in time to prevent heavy loss

—Wallace's Farmer

Save An Extra $5 Per Hog

Here's a life-cycle plan of hog health insurance which is based upon prevention rather than cure . . .

Condensed from
National Live Stock Producer
John B. Herrick, D.V.M.

IF YOU raise hogs, you're likely to encounter swine diseases in your herd from time to time.

A lot depends on how you manage. There is no one answer to the ever-present problem of swine disease prevention and control. However, you can't operate a profitable swine enterprise on a "rescue the perishing" basis.

Swine diseases cost hog producers an estimated $5 million each year. If you raise and market 146 hogs per year your share of that loss is about $5 per hog or a total of $730! The bulk of this $5 loss, or $3, is charged to baby pig diseases such as scours, TGE, anemia, chilling, etc. The next two most costly diseases are virus pneumonia and hog cholera which account for roughly a loss of $1.50 per pig.

Most of these losses, however, can be avoided by a good swine health program arranged in consultation with your veterinarian. Such a program should be based upon disease prevention and control rather than treatment. A practical life-cycle disease prevention program might run as high as $2 per hog marketed. Wouldn't it be worth the effort of investing $2 to save $5?

A sound health program, of course, is based upon more than the use of vaccination and drugs. It should be a scientific as well as practical approach to breeding, feeding, housing, and management of the swine enterprise. Hog production is a science, but the hog producer must have a little "hog sense" too.

The fundamental principle of swine disease control is sanitation. And this means keeping everything clean—laboratory clean! We have developed what we believe is a practical, workable health plan for hogs which is not too expensive because it is based on prevention rather than cure.

The following group of hog diseases are those that most com-

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National Live Stock Producer, 139 North Clark Street, Chicago 2, Illinois

monly occur during the hog's life cycle. Some of these diseases can be readily prevented, others cannot. Make your own checklist of hog diseases that have cost you money and see if our recommendations can prevent some of your losses.

1. Prior to Breeding

Watch out for brucellosis! Abortions are still prevalent in swine—a portion of these are due to Brucella suis. Blood tests are necessary to determine whether or not this disease is present. The disease manifests itself similarly to leptospirosis, that is, with abortion being the main symptom. Thus, blood test the breeding stock prior to breeding for brucellosis and while at it vaccinate for leptospirosis.

Buy your boars at least 30 days prior to breeding date. If boars are not from a brucellosis certified herd, they should be tested for brucellosis before you buy them and tested again when brought onto the farm. Gilts should not be bred until they have had several heat periods or are at least 7 to 8 months of age. Fertility of boars can be checked prior to the regular breeding season by breeding females not to be used for brood sows and observing them for return to heat periods. Your veterinarian can determine fertility levels by semen examination.

2. During Breeding

Do not breed sows if they have flu or other diseases. This affects the litter size adversely and has been demonstrated in many herds. While you are at it, check with your County Agent to see if you are on the right breeding program. Why breed hogs that are not prolific or desirable for the market? Keep an eye on new developments in artificial insemination of hogs. In time, we may be able to find the answer for breeding production-tested stock without the cost of buying a boar.

3. During Gestation

If females have not been vaccinated for erysipelas they can be safely vaccinated during their gestation period. Erysipelas in

A hen has to drink almost a pint of water to make one egg.

many herds may not be controlled adequately when pigs are only vaccinated at 6 to 10 days of age. In some herds the disease is so severe that erysipelas in the pregnant sow and very young pigs poses quite a problem. Erysipelas vaccination of pigs at a few days of age seldom gives protection for more than a few weeks. Thus, when sows are vaccinated during the latter half of the gestation period, they are protected during the farrowing period.

Protection from a recently vaccinated sow is passed on to the young pigs while they are nursing. Then, when the pigs are vaccinated, their protection in most cases will last until they are ready for market. Erysipelas strikes in many forms. The acute form is obvious, whereas the chronic form—the type which causes hogs to have swollen joints and walk with stilted gait—is the type that causes most financial loss. Vaccination will aid in preventing this loss. There is no reason why sows can't be wormed with piperazine products and sprayed with Lindane during pregnancy. Of course you should be sensible and do these jobs from 10 to 30 days prior to farrowing.

Care must be taken in handling animals infected with erysipelas as the disease may be transmitted to man. Use a 4% cresylic solution (1 cup to 2 gal. water) or phenol (same strength) as a disinfectant.

4. During Farrowing

Every hour you spend in scrubbing sows, farrowing pens and equipment to be used for new-born pigs means more money in your pocket. Good, healthy pigs are not produced "by luck" but "by planning." Chilling kills more baby pigs than any other factor including crushing by the sow. Consider that the new-born pig is coming from an environment of constant temperature into a new environment of some 30 to 40 degrees difference in temperature. This causes chilling and scours and lowers the pig's resistance to other diseases.

Be prepared to handle this problem with farrowing stalls, heat lamps, and "your own personal attention" at farrowing time. If the sow needs help in delivering pigs, use surgical cleanliness to prevent uterine infections. The vet can save both the sow and her pigs with an operation if she has not labored too long before he is called. Remember the baby pig at birth has already cost you over $5 so your time is well spent in the few extra hours you sit up with the sows at farrowing time.

A 100 acres of US land today produces as much as 175 acres 10 years ago.

5. First Three Weeks

This is the period when the greatest pig loss occurs. Important diseases at this stage of life include: Navel infections, scours, TGE, and anemia. Pigs born in pens and surroundings that require painting of the navel with iodine are going to contract other infections. Therefore, the best guards against navel infections are clean pens, clean sows, and clean bedding. Swollen joints, hard na-

vels and unthrifty pigs are signs of navel infection. If your pigs have navel infections, it's a sure sign of poor management and lack of sanitation.

Books could be written about scours in pigs as there are many causes for these intestinal upsets. The number one problem in the first few hours of the pig's life is his exposure to cold floors and wet bedding. If sows are constipated or sick, they will contribute to the problem, plus offering dirty udders for pigs to suckle.

Make sure that the first mouthful of milk the pig gets is free of worms and other infectious agents. If the pig is warm and dry and has his belly full of clean milk, little trouble will occur. Feed changes for the sow are not necessary at farrowing time, so maintain the bulky ration for a day or two after farrowing and then gradually make the necessary changes in the ration.

TGE (transmissible gastro-enteritis) is the hogman's most dreaded disease. This disease strikes pigs of all ages but the mortality is greatest in baby pigs. There is no known cure. TGE's first symptoms include yellowish, slate-colored diarrhea, shrunken bodies, vomiting and failure to rise after nursing. One way to prevent the spread of TGE is for you to keep all strangers, in fact all people, out of the farrowing houses. And you stay out of other hog houses. The TGE virus can be spread in many ways. On hog farms where farrowings occur continuously, TGE virus seldom leaves the premises. This problem has licked many hog producers who are practicing continuous farrowing.

Veterinarians have tried feeding the viscera of TGE-infected pigs to pregnant sows in an attempt to develop immunity to the disease. In herds where this practice has been employed, the results have been satisfactory. However, it should be employed only as a last resort and after a definite diagnosis has been made and only in herds that are farrowing more than twice a year.

"The demand for agricultural commodities is inelastic, and yet farmers cannot easily turn off the production faucets."
—SRI Journal

6. From 3 to 12 Weeks

Pigs are born with very little iron in their bodies to manufacture red blood cells, so they must have an injection or other sources of iron supply within a few hours after birth or they will become anemic. Injectable iron appears to be the best method of preventing anemia. In fact, anemia is more easily prevented than treat-

ed. Treatment at 2 to 3 days of age and again at 3 weeks of age is recommended.

Erysipelas doesn't always strike in the acute form. In fact, the greatest money loser is the chronic form where poor growth and arthritis are the main symptoms. Thus, a good investment would be vaccination of pregnant sows and their pigs when they are 9 to 10 weeks old.

The hog cholera virus is peculiar in that it strikes when least expected. Refusing to vaccinate hogs against hog cholera would be just as foolish as a man refusing to take out auto insurance because he has never had an accident. All hogs should be protected against cholera at 5 to 6 weeks of age. The modified live hog cholera vaccines plus serums are recommended.

A farm conservation plan is the only safe shortcut to a permanent agriculture.

Gut Edema is caused by fast growing pigs on high energy rations because they sometimes eat too much too fast, become toxic and die. Some research indicates that a virus causes this disease. Diseased pigs from a few days of age to about four months have staggering gaits, or exhibit "bicycling movements" when down. Many are found dead with no symptoms. There is no known cure at present, but the best prevention is to reduce feed, flush the gastro-intestinal tract with purgatives and slowly bring animals back to feed.

Tail Biting is a Puzzle

Tail biting is a vicious habit in pigs. Despite all recommendations there seems to be no specific reason why or what to do about it. Whatever works best for you — use it again. Crowded conditions and boredom appear to be one cause. If possible find and isolate the lone instigator.

Parakeratosis is a mange and should not be confused with Greasy Pig Disease. Scaly incrustations on the hide of the pig may mean a mineral imbalance in the ration. Add zinc to the ration to relieve this condition.

Greasy pig disease, just as the name implies, occurs when pigs' hides become oily and greasy. Several theories have been put forth as to the cause and treatment for this disease but none of them is effective. The main problem in most herds is to differentiate this condition from mange, ringworm, parakeratosis and sunscald.

Internal Parasites:—Pigs farrowed from sows that have been wormed in thoroughly scrubbed pens then moved to confinement or clean pasture should not car-

ry a heavy parasite load. There is no wormer that is 100% effective, but promiscuous worming is not advocated because a wormer strong enough to kill worms is also strong enough to damage pigs. If lack of sanitation has occurred when pigs are 12 to 14 weeks of age, worm them with piperazine compounds in their drinking water. If worms are in the digestive tract this will readily eliminate them.

External Parasites :—Mange and lice are inexcusable in hogs. If the sow was sprayed prior to farrowing, few external parasites will exist. However, spraying when the pig is 3 months of age, then again 3 weeks later will remove any doubt of the existence of lice or mange. Use Lindane in a warm water solution with detergents added. One or two quarts per animal should be adequate. Remove old bedding, spray sleeping quarters and replace with clean bedding.

Rhinitis:—Sniffling of young pigs and distortions of the nose along with poor growth rates are symptoms of rhinitis. This disease is usually harbored by breeding stock. Stresses such as anemia, over-crowding or presence of other disease may set it off in the herd. The best solution to rhinitis is improved management and better nutrition. There is no "sure cure" however.

Virus Pneumonia:—What has been said of rhinitis can be said also for virus pneumonia. There is no known treatment for virus pneumonia, but the disease is usually accompanied by poor management practices.

Hog producers should use the veterinarian to keep them out of trouble, not get them out of trouble. This means having an adequate knowledge of sanitation, balanced rations, shelter requirements and other factors associated with good management.

Here are the highlights of some of the major diseases which must be considered in your hog health insurance program:

Brucellosis:—Blood test sows for brucellosis before breeding.

Gone are the days when the farmer worked from daylight until dark—today he has lights on his tractor and can go all night.

The disease causes abortions. You can prevent it for about $1 per sow.

Leptospirosis:—Vaccinate for this disease when blood testing for brucellosis. Check sows or gilts one month before and one month after breeding. Vaccination runs from 50c to $1 per hog.

Time and Effort Invaluable

Erysipelas:—Vaccinate sows during gestation. Check brood

sows and gilts in last one-third of gestation period. Costs run 50c to $1.08 per sow.

Mange or Lice:—Occurs most often among brood sows and gilts. This external parasite can be controlled for about 5c per sow with Lindane.

Anemia:—Treat baby pigs with an iron injection at 2 to 3 days of age. Repeat in 21 days if pigs are in confinement. Cost about 25c per pig.

Cholera:— Vaccinate the entire drove to prevent sudden and certain death from cholera. Pigs from 5 to 7 weeks of age are most susceptible. Cost runs 75c to $1 per pig for cholera insurance.

Internal Parasites:—The common accepted practice is to worm 30 days prior to farrowing for brood sows and gilts. Worm pigs with piperazine at 12 to 15 weeks of age. Spray Lindane at the same time. Cost runs from 10 to 20c per pig.

External Parasites:—Lice and mange can lower feed efficiency and predispose animals to other diseases. Spray with Lindane and detergent. Costs run 10 to 20c per pig.

Skin diseases frequently make pigs susceptible to other diseases. Therefore, veterinary attention of all skin conditions is recommended.

Other Diseases:—Common hog diseases such as rhinitis, TGE, virus pneumonia, gut edema, swine dysentery, greasy pig disease, parakeratosis and jowl abscesses cannot be prevented by vaccination. There is no specific treatment except prevention, careful selection of breeding stock and strict sanitation. The cost of time and effort in prevention of these diseases is invaluable.

The man who makes such an investment is always well repaid with an extra $5 at marketing time.

Lives Of Animals

We know that the average life span of human beings is about 70 years. But do you know how long animals can live? Here is a list of the average life span of some of our common animals:

A cow, 25 years.	A sheep, 10 years.	A tortoise, 100 years.
A horse, 25 years.	A cat, 15 years.	A parrot, 125 years.
A swan, 25 years.	A dog, 14 years.	A whale, 300 years.
A squirrel, 8 years.	A lion, 40 years.	An elephant, 400 years.
A canary, 6 years.	A crow, 6 years.	

—*Sunshine Magazine*

High Nitrogen Grass . . . How High Can You Go?

Overdo nitrogen applications on a hay crop, and you expose livestock to the hazard of nitrate poisoning . . .

Condensed from Forage Grower's Digest

Ralph Reynolds

IT'S been pretty well established that yields of grass can be doubled and even tripled by pouring on the nitrogen. With a good variety, good soil and growing conditions and heavy nitrogen, you can make about as much grass as you want.

Right along with this interest in high nitrogen grass has come a rumble of warnings from around the country against nitrate poisoning. Nitrates not only cause trouble in drouth stunted grass but also they can accumulate in lush growing, high nitrogen grass.

Recent tests at Rutgers University have thrown some new light on the problem of how high you can go with high nitrogen grass.

The researchers fertilized plots of orchard and reed canary grass with various levels of nitrogen. They weighed the hay yield from the plots and tested for nitrate factor.

They report that applications of 400 pounds of nitrogen per acre just about doubled dry matter yields over 50 pound applications in the reed canary plots. Protein percentage was also much higher on the high nitrogen plots.

Trouble is, the nitrate factor in the 400 pound plots checked out at 1.2, considerably above the .5 generally considered as a safe maximum (as evaluated by nutritionists).

On the basis of these tests, the general recommendation from Rutgers is to apply 150 to 200 pounds of actual nitrogen. This gives high production and doesn't crowd the danger point as far as nitrate factor is concerned. The researchers stress that high levels of potassium and phosphorus are

Since soybeans are more tolerant of cold than many other crops, they can be planted successfully over a wide season.

Reprinted by permission from Forage Grower's Digest, John Deere, Moline, Illinois

also needed to off-set the accelerated depletion of these nutrients under high production. In all cases. the amount of fertilizer applied should be based on a soil test.

Here, in a capsule, is how the Rutgers tests turned out.

		Pounds of Actual Nitrogen Per Acre			
		50	100	200	400
Orchard Grass	Pounds Produced ..	5,108	6,099	7,430	8,458
	Per Cent Protein ..	11.4	12.5	16.6	19.9
	Nitrate Factor ...	.08	.10	.28	1.8
Reed Canary Grass	Pounds Produced ..	4,991	6,359	8,086	9,319
	Per Cent Protein ..	12.9	13.7	15.4	19.6
	Nitrate Factor ...	.07	.15	.21	1.2

Placement of Fertilizer on Corn Studied By Agronomists

How fertilizer is placed for your corn crop can have a lot to do with yields—especially in seasons of inadequate rainfall.

Research at Virginia Polytechnic Institute has shown that fertilizer injury to corn germination is closely related to soil moisture. If the moisture supply is adequate throughout the growing season, reasonably heavy rates of fertilizer near the seed will reduce yields very little, says Agronomist J. A. Lutz. However, where heavy rates of fertilizer are to be applied it is better to play it safe by broadcasting most of it, and putting only a small amount in the row.

—*Virginia Polytechnic Institute*

Manufacturers are turning out scented bags now for clothing and for foods. All kinds of good food odors are being used to give added attraction to the package. It's been found that it is hard to resist a food that smells good, and the plastics people are taking advantage of this.

You can also find scented bags for storing your clothing. There are even some that are scented with special scents such as cedar or pine for men.

Are You A Good Credit Risk?

Check this list before you apply for your loan. It may help you to improve your credit rating . . .

Condensed from Farm Management

Alvin T. Anderson, University of Illinois

FARM size and farm production needed to provide adequate incomes from farm operations have been expanding at an increasing rate, especially during the past five to ten years. Higher farm costs and lower prices of farm products are speeding this development.

One important result is that more farm families, both owner and tenant, have had to supplement their own investments with borrowed funds.

In considering applications for farm credit, farm lenders constantly ask, "Is the applicant a good credit risk?" To get a loan, you must convince some lender that you have a sound basis for credit and also the required security. You must also show that your farming program and management ability will increase your income enough to pay interest and principal. In short, you must prove that you are a good credit risk.

The questions in this article will give you an idea of the kind of information many lenders use in making loan decisions. To measure yourself as a credit risk, answer each question "yes" or "no". If you must answer "no" to very many, you may find it embarrassing to answer some of the questions a prospective lender might ask you. NOW RATE YOURSELF.

The Farm Family (most important)

1. Can we show that with the proposed loan we will earn enough extra profit to meet principal and interest payments?
2. Do we adopt new and improved farm practices that will increase our farm earnings?
3. Do we pay our bills promptly?
4. If we are not able to pay, do we promptly explain to our lender just what we can do?
5. Do we try to get most of our credit from one source?
6. Do we welcome suggestions from our lender about business and financial affairs?

Reprinted from Farm Management, Department of Agricultural Economics, University of Illinois, Urbana, Illinois

7. Do we maintain a reserve (cash and liquid assets) large enough to meet minor emergencies?

The Land and Farming Plan

1. Is our farming unit (crops and livestock) large enough to carry a loan and provide income for the level of living we want?
2. Do we have the power, labor, machinery and equipment needed to farm for maximum profit?
3. If we are renting, do we have a clear understanding on equitable sharing of fertilizers, insecticides, and other costs that will increase earnings for both owner and operator?
4. Do we use a maximum high-profit cropping system consistent with the control of soil erosion?
5. Do we apply fertilizers and limestone on the basis of soil tests and yield checks?
6. Will we have money for farm and home improvements after meeting living expenses and loan payments?

Farm Records

1. Do we keep good records?
2. Do our records show how much money we made or lost on each farming operation?
3. Will our records give enough information for a financial statement (assets, liabilities, and net worth)?

The Loan

1. Will the proposed loan increase our net income?
2. Do we avoid short-term borrowing when a longer term would be better?
3. Do we plan for our credit needs over the entire year?

Use the results of this check to improve your credit rating before you attempt your next farm loan.

Milk Sprays Kill Plant Virus . . .

In studies at the Agricultural Experiment Stations of Mississippi and North Carolina, W. W. Hare and G. B. Lucas have found that transmission of tobacco mosaic virus was reduced by spraying plants with milk and certain milk products.

The effect of spraying with milk was tried on three types of plants, pepper, tomato, and tobacco. Dried milk and canned milk diluted to the concentration of the original milk were found to have essentially the same effect as homogenized fresh milk.

It is theorized that milk may also be useful in preventing the manual spread of other plant viruses. —*Western Dairy Journal*

Farm Tractor Features Favored By Operators

What 195 farmers like about their tractors . . .

Condensed from
Science For The Farmer

Benton K. Birstol
Pennsylvania State University

THE tractor is a popular subject of discussion among farmers (1) because of the manifold jobs for which it is used, and (2) because of advancing purchase prices.

The characteristics most valued by operators may indicate features which will be emphasized in farm tractors of the future.

As a measure of the thinking of users with regard to these power units, the opinions of 195 farmers were sought. They were parents of students in 26 randomly selected vocational agriculture schools in the State of Pennsylvania. The enterprises providing most of their income were dairying, corn growing, and poultry production.

On the basis of their past experience with tractors, 99 of these farmers believed a tractor should operate efficiently for more than 4 years without general repairs, and 78 believed that a tractor would need a major overhaul in 4 years or less. While a number of the farmers had owned several makes and models of tractors, two makes were by far the most popular.

Desirable Features

A list of features most desired by the farmers for their next tractors and the number of votes for each follows:

1. Size: one- or two-plow, 66; three-plow, 88; four-plow and over, 36; not voting, 5.

2. Front wheel type: tricycle, dual, 110; 4-wheel, adjustable axle, 55; other, 26; not voting, 4.

3. Fuel type: gasoline, 144; diesel, 40; other, 3; not voting, 8.

4. Kind of transmission: conventional, 66; torque amplifier, 101; not voting, 28.

5. Number of speeds: four-speed, 23; five-speed, 64; six-speed, 72; eight-speed, 30; not voting, 6.

Reprinted from Science For The Farmer,
The Pennsylvania State University, College of Agriculture, University Park, Pennsylvania

6. Slowest speed: one mile per hour and under, 31; one and one-half mph, 129; three mph and over, 26; not voting, 9.

7. Fastest speed: fourteen mph and under, 24; fourteen and one-half mph, 32; sixteen mph, 58; eighteen to twenty mph, 48; twenty-one mph and over, 25; not voting, 8.

8. Kind of power take-off: transmission, 28; live or continuous, 160; not voting, 7.

9. Power lifts: yes, 176; no, 6; not voting, 13.

10. Mounted implements: yes, 129; no, 20; not voting, 46.

11. Quick hitch: yes, 141; no, 26; not voting, 28.

12. Adjustable rear wheels: yes, 181; no, 9; not voting, 5; manually adjusted, 67; power adjusted, 118; not voting, 10.

13. Headlights: yes, 187; no, 3; not voting, 5.

14. Fuel tank capacity in terms of plowing time: six hours and below, 39; eight hours, 67; ten hours and above, 82; not voting, 7.

15. Hour meter: yes, 153; no, 35; not voting, 7.

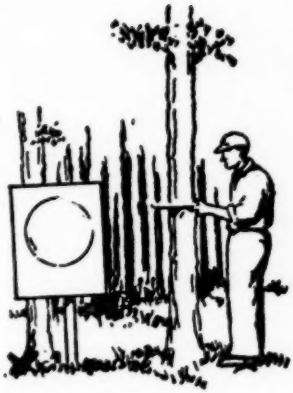
Improvements Suggested

Ten farmers wrote suggestions for improvement of farm tractors on the survey form. Comments and the number of votes for each were: "tractors should cost less and last longer," 2; "most tractors should be heavier in front," 2; "tractors should have low priced, lightweight, removable cabs," 1; "greater consideration should be given to conditions faced by farmers," 1; "faster hookups of all mounted implements should be possible," 1; "diesel tractors should be easier to start in cold weather," 1; "power steering should be improved," 1; and "tractors should be less costly to operate," 1.

Early Cows

History tells us that cows were being milked some 9,000 years B.C. Milk was recommended as a medicine centuries before Christ. It is said that Gopatis . . . first tribal king in the middle east . . . was a keeper of cows . . . but the milking was a sacred rite performed by 3 priests. One stood at the cow's head . . . another at her tail . . . while the third priest and one of the highest rank did the milking.

Any farmer . . . still milking by hand . . . would probably consider that a good way to get the job done . . . the first man feeding the cow . . . the second preventing her from covering too much territory in using her tail to swat flies . . . and the third man with the most "pull" getting the greatest amount of milk. —*Michigan Farmer*



Manage Your Woodlot For More Income

Many farmers can earn $2 an hour working in their woodlot . . .

Condensed from Farm Profit

WANT to net $2 or more per hour during your spare time every fall and winter?

Chances are you can do just that if you treat your farm woodlot as a crop and don't neglect it.

F. B. Trenk, University of Wisconsin farm forester, says that in a study made over an 8-year period more than $3,000 was grossed from a 40-acre woodlot. Stumpage charges and other costs amount to about $1,000. This left a net income of about $2,000, or $250 per year.

Average income per manhour averaged $1.66 over the 8-year period. During the last four years when power saw equipment was used, income was well above $2 per hour. Trenk says that these wages are better than those earned by many farmers in regular farm operations.

W. S. Swingler, assistant chief of the U. S. Forest Service, says the future looks bright for the Midwestern and Eastern farmer who builds a good tree crop on his land. It's the one crop without a surplus in sight for at least 40 years. In fact the demand for raw timber is expected to more than double in the next 30 or 40 years.

The yield from most forests is only half what is should be, according to Swingler. A study in one area showed that the average small forest owner harvests only 123 board feet per acre. If the average farmer followed a program outlined by a professional forester, he probably could double or even triple his income.

Have a professional forester mark low quality trees for culling periodically, advises E. J. Lott,

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Massey-Ferguson Farm Profit, 710 North Plankington, Milwaukee 3, Wisconsin

Purdue University extension forester. "There is often a difference of $25 to $40 or more per thousand board feet between good quality sawlogs and low grades.

"The usefulness of lumber depends far more upon the straightness of the tree from which it is sawed, care in sawing and the way lumber is piled and cured after sawing than on the species of the tree," he says.

Top quality trees that are not yet mature should always be left in the stand. They grow faster and increase in value, and are a source for natural reseeding. A good tree will at least double in value when it grows from 18 to 22 inches in diameter.

You'll make more money if you sell your timber by board feet rather than by the tract. The usual practice has been for the woodlot owner to take a timber buyer through the stand and let him make an offer. However, you seldom get the true worth of your timber because such an estimate isn't accurate. The buyer offers a price that allows for errors in judgement, too.

Trenk points out that many farmers make timber sales under pressure of an immediate cash income. "They forget about future timber production or of potential income under different harvest methods. Timber is a long-term crop that must be harvested periodically, not annually," he says.

In order to get the biggest possible return from his woodlot, a farmer should do the cutting, trimming and delivering himself. P. O. Anderson, University of Minnesota forester, advises against accepting a stumpage price for trees. He explains that stumpage price refers to the price offered for standing trees. This price is low because the buyer who takes the trees assumes all the risk and cost of getting the timber to market.

Stumpage makes up only 13% to 14% of the value of marketed trees. If trees are sold on that basis, more than 80% of their market value is lost.

Budgets are useful tools of Management in today's farming operations. When based soundly, they can remove a lot of the guesswork. They are useful for forecasting, for setting goals, for establishing financial standards and for evaluating alternative courses of action — and besides your banker will like them and you — if you provide for him a yearly basis.

Anderson advises that a sales agreement be drawn up before any timber is cut. These contracts are for a definite period of time. They specify a certain amount of

wood at an established price. This way you'll be assured of a market and will know in advance just what your timber will bring.

It pays to become acquainted with log grades, too. Unless you know them, you can unwittingly turn a high quality tree into a low-quality log.

You should consider a program for increasing the returns from the woodlot on your farm. Your first step is to seek the advice of a trained forester.

In many areas highly skilled industrial foresters or those in business for themselves are available for a small fee. Some states also have a small staff who do this work free, but frequently they cannot keep up with the demand for their services. The forester you engage will help you set up a sustained harvesting program that will pay you the most dollars over a long period of time.

Winter Market Hog Care

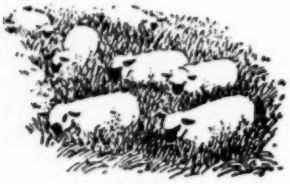
Shelter, water and feed are important in efficient winter market hog production. Purdue University extension swine specialists say each factor must be considered if hogs are to make the greatest gains during cold weather.

It is neither necessary nor recommended that hogs be kept in a tightly closed building. They will stay healthier and freer of respiratory diseases if provided dry and draft-free sleeping quarters with ample bedding. The specialists point out that ground corn cobs make a suitable bedding for shoats.

Even during the coldest period of winter, water is an important part of the ration. Hogs will drink about two pounds of water for each pound of feed eaten, the specialists say. Clean, fresh water which will not freeze can be provided with automatic fountains or other types of waterers.

Pigs weighing under 100 pounds and not on pasture should receive 16 percent total protein in their ration. The protein content can be reduced to 14 percent for hogs over 100 pounds. Hogs should have access to a self-feeder or box containing salt and a mineral mixture at all times. —*Purdue University*

Sheep and Lambs As A Farm Enterprise ?



You'll want Western ewes for faster, higher returns . . .

Condensed from Nebraska Farmer

Ted H. Doane, University of Nebraska

THE sheep industry in the United States is divided into two distinct categories. The first type (western) is primarily for the production of wool and feeder lambs.

It is encouraged by the lack of feedstuffs for slaughter lamb production and the price of high quality wool. The wool is usually of fine quality which keeps the feeder lamb production from being their primary consideration. The lambs which are not used for replacements due to an undesirable fleece and conformation are sold as feeder lambs.

The production of lambs is the second type of sheep raising. The first consideration is meat and secondly wool. This type of production is in the central and eastern states because of the usually abundant vegetation and feeds. The majority of the natives are found in these regions.

While the ranchers who raise the western type of sheep usually cannot develop a market lamb in 6 months after the lamb is born midwest farmers should put a choice lamb to market at 4 months of age. This is primarily due to the feed situation.

Market Choice Lambs Early

Market lamb production is a relatively simple procedure. To make it so, you must have good fences, good feed, have the right kind of ewes and rams, and like sheep.

Let's tie together the feed, the fences and the love for sheep. You know how important the feed is, and if you don't have good fences it is very possible you won't like sheep. It's as simple as that.

As for the right kind of rams, they are those which have excellent meat qualities and conformation. They are large and should give a large growthy lamb. Some breed examples of this type of ram are Hampshire, Shropshire, and Suffolks.

What are the right kind of ewes? You need the kind of ewes which will give you a lamb ready

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to go to slaughter in 100 to 120 days of age. This usually means a big, good-milking ewe with twinning qualities. Twinning not only keeps up the lambing percentage, but also markets more pounds of lamb per ewe. Creep feeding lambs is usually essential.

West Virginia compared 65 western ewes with 65 native ewes. The 10-year summary was very striking.

	Native	Western	Difference
Number of lambs marketed	395	561	166
Pounds of lamb marketed	30,913	45,088	14,175
Receipts from lambs	$5,990	$8,950	$2,960
Total pounds of wool	1,801	4,121	2,320
Receipts from wool	$1,009	$2,341	$1,332
Total receipts	$7,000	$11,291	$4,292

Western vs Natives

Let's compare western ewes and native ewes. Natives are those which are up graded, or the sheep which have been raised on the local farms for several generations. The westerns are predominantly of wooled breeding (Rambouillet or Merino), or a cross of the wool breeds and mutton breeds. In the latter type, emphasis is on meat; but they still maintain a desirable fleece (½ to ⅜ grade). We should not use the purebred ewes in this comparison because they are raised for a different purpose (breeding stock).

In 1957 Tennessee University made a test comparing 127 western with 62 native ewes. In the final analysis, the western ewes returned 15 more pounds of lamb per ewe than did the native ewes. It is possible that you may have seen it in your flock, but maybe not to this extreme (probably 5 to 10 pounds per ewe). The increase was in the twinning and the milking ability of the western ewes.

This was a $4,292 difference in gross dollars, or $429 per year more income in favor of the western type. The length of productivity was a big factor in the total outcome. The western ewes were superior to the natives. There was a much heavier loss in the natives as they reached 7 to 8 years of age. (Example: at 7 years old, 32 natives and 15 westerns were lost due to various causes—at 8 years old, 37 natives and 27 westerns had been lost).

Northwest vs Southwest Ewes

Now to compare the two types of western ewes, the northwest (Idaho, Montana, Wyoming types) and the southwest ewes (Texas, New Mexico type).

There are two distinct types of northwest ewes, the blackface and the whiteface. The blackface is usually a cross of grade Rambouillet ewes with the Suffolks and/or Hampshire rams, or the

same cross back to ½-¾ fine wool rams (Rambouillet, Columbia, Panama or Corriedale).

The whiteface northwestern ewe is usually the result of the grade Rambouillet crossed with Columbia, Panama or Corriedale rams.

The southwest ewe is predominantly of Rambouillet breeding which are whitefaced and have a fine grade of wool.

The advantages of the northwest ewe:

1) Larger
2) More prolific (more twins)
3) Excellent milkers
4) More meat qualities in the blackface northwestern

Advantages of the southwest ewe:

1 Due to body size, they require less feed for maintenance
2) A fine grade wool clip
3) Initial cost is less per ewe

The Tennessee data also compared 53 northwest to 74 southwest ewes. They found in this test that the northwest ewes gave 16 pounds more lamb per ewe bred. The lambs weaned at approximately the same age. One Missouri test gave 26 pounds per ewe in favor of the northwest ewe.

In New Mexico, the USDA Southwest Range Laboratory compared large ewes to small ewes within the same breed. The yearling weight was the only factor of selection. Ewes were divided into 60-69 pound, 70-79 pound and 90-100 pound groups. The results were as follows:

Group No.	Weight Range	Yearling Weight lbs.	Weight of Lamb at Birth lbs.	Lamb Weight at at Weaning lbs.
133	60-69	65	7.2	52
211	70-79	75	7.9	54
89	80-89	83	8.2	57
13	90-100	93	8.5	62

The ewes were bred to similar rams and the analysis gave the advantage to the larger type ewe by 4½ pounds when the 80-100 pound ewes were compared to the lighter 60-79 pound ewes. As the weight of the ewes went up, the size of the lambs strongly increased.

These tests should give you an idea as to the importance of the size and type of ewes to keep. For the best production and the quickest dollar return, the western ewes usually pay off in dividends. Regardless of the type of western ewe you choose, you must always keep in mind the advantages of the different types. An important thing is, you must be satisfied with your decision.

FUN ON THE FARM

A Collection of Jokes and Humorous Farm Stories

Shortly after the Civil War, when Grandmother was rearing her family of six, good seed for a productive garden was hard to come by. Almost everyone saved their own seed from year to year.

Wanting to change to a new, earlier, and expensive pea seed grandmother obtained a small amount and planted for use only as seed the following year. Directly after it was planted a broody hen, having been thrown out of the main coop to change her "setting plans," scratched out and ate up the full crop of the precious seed. Discovering her at the mischief and being loath to wait for a new supply, Grandmother promptly chopped the biddy's head off, retrieved and replanted the seed, and had a delectable chicken dinner for her own brood.

—Mrs. C. H. Wadsworth, in American Agriculturist

★ ★ ★

A young sister of a 4-H boy whose heifer didn't place high at the county fair, gave this reason why, "You know her 'rutter' really wasn't too good."

The metal strips used to band birds are now inscribed, "Notify Fish and Wild Life Service, Washington, D. C." They used to read, "Washington Biological Survey," abbreviated to "Wash. Biol. Surv." This was changed after a farmer shot a crow and disgustedly wrote to the U. S. Government as follows: "Dear Sirs: I shot one of your pet crows the other day and followed instructions attached to it. I washed it and boiled it and served it. It was terrible! You should stop trying to fool the people with things like that."

Sunshine Magazine

★ ★ ★

The farmer boy and the city girl were watching the calf and its mother rubbing noses.

"Gee!" said the farmer boy, "I'd like to be doing that."

"Go ahead," smiled the city girl. "It's your cow."

★ ★ ★

My 80-year-old father-in-law is as unconscious of his age as a 20-year-old. One cold day he came in wet and muddy from his knees down. "I wanted to cross the creek to see about the cow,"

he explained. "I used to jump it clear and easy, but now every dang time I try it I land in the middle. Guess I just ain't noticed it getting wider." —*The Dairy Plant Fieldman*

★ ★ ★

A cafe owner had his nephew over to the place for lunch one day. The youngster looked the menu over with its long list of entrees and sighed, "I'm glad my mother isn't here. I'd have to eat it all."

★ ★ ★

A decrepit horse was being offered to the highest bidder. An old farmer watched as a young man in riding breeches bid for the animal. When the sale was completed he turned to the young fellow.

"Tell me," he said, "what on earth are you going to do with that nag?"

"Oh," replied the cocky young sportsman, "I'm going to race him."

The farmer took a second look at the animal. "Well, you'll win," he said. —*Arkansas Valley Journal*

★ ★ ★

A disturbed wife to husband who had just returned home. "I wish you'd label these switches. I unloaded the silo, mixed a ton of feed, and cleaned the cowbarn before I could get the lights turned on." —*Wis. REA News*

First Farmer: "Well, since Tom has a college degree, can you see any change in the way he plows?"

Second Farmer: "No, he plows the same. It's the way he talks."

First Farmer: "Yeah? How do you mean that?"

Second Farmer: "Well, when he gets to the end of the row, instead of saying "Whoa, Haw, or Gee," he says, "Halt, Rebecca, pivot and proceed." —*Mrs. Medrick Johnson in The Progressive Farmer.*

★ ★ ★

A wolf is a man who wants to play house without dishes.

★ ★ ★

The next door's hens were constantly coming through a hole in the wire of the chicken run. The Jones' protested but the hole was never mended. As he returned home from work one evening Mr. Jones saw his neighbor patching the wire with feverish haste. "What happened?" he asked his wife. "Oh," she replied with a smile, "I just put a few eggs under one of our bushes and made sure he saw me collect them." —*The Texas Future Farmer*

★ ★ ★

There was the querulous customer examining a cowhide jacket who demanded, "Are you sure this is good material?" "Of course," replied the clerk. "It held the cow together."

A farm is a hunk of land on which if you get up early enough mornings and work late enough nights, you'll make a fortune—if you strike oil.

★ ★ ★

A gang of county roadmen were way out in the country to repair a road when they discovered they had left their shovels in town. They phoned their foreman.

He replied: "I'll send the shovels out right away by truck. Lean on each other until they get there." —*Vee-Gee Messenger*

★ ★ ★

Johnny was awfully excited over his first trip on a train. The train plunged into a long, dark tunnel, and the youngster gasped in surprise. Just as suddenly, it roared out into the daylight at the other end.

Johnny grabbed his mother's arm. "Look, mom—it's tomorrow!"

★ ★ ★

Every time we make both ends meet something breaks in the middle.

★ ★ ★

A middle-aged farmer dropped by the perfume counter, picked up a sample atomizer and gave himself a couple of squirts.

With a wink at the surprised saleslady, he remarked:

"Like to keep my wife guessing," and went on his way.

The principal objection to old age is that there is no future in it.

★ ★ ★

A farmer visited his son's college. Watching students in a chemistry class, he was told they were looking for a universal solvent.

"What's that?" asked the farmer.

"A liquid that will dissolve anything."

"That's a great idea," agreed the farmer. "When you find it, what are you going to keep it in?"

—*Holstein-Friesian World*

★ ★ ★

"You say you want to get a divorce on the grounds that your husband is careless about his appearance?"

"Yes, he hasn't made one for nearly two years."

★ ★ ★

Here's the latest in absent-minded professor gags: One was bemoaning the conduct of college students in a discussion with a colleague. "Oh, all this talk about college romancing isn't any different than in our day," said the colleague. "I recall how I used to neck with my wife. Didn't you?" "I don't remember," said the absent-minded prof. "What was her maiden name?"

★ ★ ★

Morning: the time when the rising generation retires and the retiring generation rises.

The daughter of the gentleman farmer was asked if their hens laid eggs.

"They can, of course," she replied haughtily, "but in our position, you understand, they don't have to." —*Butter-Fat*

★ ★ ★

A small-town editor found himself short of material so he had his compositor set the Ten Commandments which were run without editorial comment.

After the paper was published, he received a letter which said: "Cancel my subscription; you're gettin' personal." —*Implement & Tractor*

★ ★ ★

A husband was teaching his wife how to drive when the brakes suddenly failed on a steep downhill grade. "I can't stop," she shrilled, "what will I do?"

"Brace yourself," said the husband, "and try to hit something cheap." —*Noel Poe in the National Future Farmer*

★ ★ ★

"Mother," asked the little one, on the occasion of a number of guests being present at dinner, "will the dessert hurt me, or is there enough to go round?"

—*The Farmer*

★ ★ ★

A small town is a place where everyone knows what everyone else is doing but still reads the local paper to see if they have been caught at it.

★ ★ ★

The two tramps were stretched out on the green grass. Above them was the warm sun, beside them was a babbling brook. It was a quiet, restful, peaceful scene.

"Boy," mused the first tramp contentedly, "right now I wouldn't change places with a guy who owns a million bucks!"

"How about five million?" asked his companion.

"Not even for five million," drowsed the first tramp.

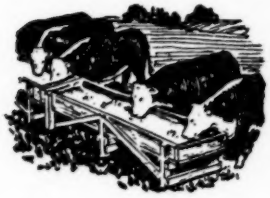
"Well," persisted his pal, "how about ten million bucks?"

The first tramp sat up.

"That's different," he admitted. "Now you're talking real dough!" —*Badger Farm Bureau News*

Contributions for this page are welcome. Send your "Fun On The Farm" story to Farmer's Digest, Fort Atkinson, Wisconsin.

Are You Feeding Enough Protein?



Latest figures on protein needs of fattening cattle . . .

Condensed from Wallace's Farmer

YOU CAN lose money by feeding fattening cattle rations that aren't balanced. First step is to evaluate the quality of your hay.

Many rations are formulated figuring that good quality hay will be used. If poor quality hay is used, however, adjustments should be made.

"It's important to check the quality and quantity of the hay you're feeding," says Walter Woods, Iowa State University cattle specialist. "With hay of inferior quality, it may be necessary to increase the amount of supplement to balance the ration."

Corn generally contributes about 65 percent of the total protein in the ration. So this leaves hay and supplement to supply the rest.

Say you are feeding about 4 pounds of hay daily. What difference would hay quality make?

Compared to third cutting alfalfa hay, a mature alfalfa hay with few leaves supplies only 60 percent as much protein. In other words, you should feed three-fourths of a pound more of a 32 percent protein supplement to balance a ration containing the poorer hay.

Recommendations generally call for feeding a ration with 10-10.5 percent protein to fattening cattle.

Iowa State tests show that fattening cattle need at least a 9.5 percent ration for top performance. Yet, you can go as high as 11.5 percent protein without hurting the margin you'll make on the cattle. That's because the extra protein, over 9.5 percent, boosts the grade and selling price.

Check the ration you're feeding by using the charts at the end of this article. They are made from the National Research Council recommendations. Here's how to use them.

Suppose that you're feeding a bunch of 1,000-pound yearling

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cattle a full feed of corn (20 pounds per day), and 4 pounds of hay. How much supplement is needed to balance the ration?

The hay is first cutting alfalfa and a little stemmy. So you use the 12 percent protein from the chart. Corn is 8.7 percent protein. And the tag on your supplement says 40 percent protein.

First, you'll need to figure the amount of protein that is supplied by your hay and grain. This is done by multiplying the pounds of the hay and grain fed by its protein content.

So 20 pounds of corn times .087 (8.7 percent protein) gives 1.740 pounds of protein. And 4 pounds hay times .12 (12 percent protein) is 0.48 pounds protein. So the total protein contributed by the corn and hay is 1.740 plus 0.48, or 2.22 pounds.

Second, you'll need to find the amount of protein that must be supplied by the 40 percent supplement. Subtract the protein supplied by corn and hay from the daily protein requirement for your cattle.

Therefore, 2.22 pounds protein (supplied in corn and hay) subtracted from 2.60 pounds protein (requirement from chart) is 0.38 pounds (the amount of protein need in supplement).

Third you'll need to convert the pounds of supplement. Divide the percent of protein in the supplement into the pounds of protein needed.

Thus, .40 (40 percent protein supplement) divided into 0.38 pounds protein is 0.95 pounds supplement. Or, you'll need to feed about one pound of supplement daily to balance your ration.

You can use the same method on any ration. Suppose that you are feeding 800-pound fattening calves a ration of 10 pounds corn, 20 pounds corn silage, 2 pounds of third cutting alfalfa hay, and a 32 percent supplement. How much 32 percent protein supplement do you need to feed?

Here's the same problem worked out:

(1) What amount of protein is furnished by the corn, corn silage and hay?

$10 \times 0.087 = .87$
$20 \times 0.023 = .46$
$2 \times .15 = .30$

1.63 lbs. of protein

(2) How much additional protein must be supplied by the supplement?

2.00 (needed by 800-pound calves)
-1.63 (supplied by corn, silage, and hay)

.37 lbs. protein

(3) How much suppliement needs to be fed per day?

.37 ÷ .32 = 1.16 pounds or about 1 1/6 pounds of 32 percent supplement per day.

Most all supplements are suggested to be fed at a certain daily rate. Some companies base their supplement on one pound per day, others on 2 pounds per day, and others may be in between.

At these base rates, supplements are usually balanced so that the cattle get all the vitamins, minerals, and feed additives they need. Cutting supplement feeding rates below the base rates can short you these needed feed components. So if you plan to cut your supplement, it's best to check with your feed dealer first.

The USDA has developed a hydraulic pressure device that measures tenderness with small samples of raw or cooked meat.

It could be that you'll want to cut the percent of protein in the supplement rather than cut the amount of supplement you feed. For instance, you could do this by shifting from a 40 to a 32 percent supplement.

Also check the amount of roughage in the ration. Most recommendations call for feeding fattening cattle at least 20 percent roughage by weight.

The amount of roughage to feed over 20 percent will depend on the way you plan to handle the cattle. For pushing cattle, 20 percent is probably enough. Otherwise, you can feed more. However remember that excess roughage lowers corn consumption and slows gains.

PROTEIN CONTENT OF COMMON FEEDS

Feed	Protein
Alfalfa hay, leafy (3rd cutting)	15%
Alfalfa hay, stemmy	12
Alfalfa hay, mature, few leaves	9
Alfalfa-orchardgrass hay	10
Alfalfa-bromegrass hay, leafy	12
Brome hay	10
Brome hay, mature	6
Clover hay	14
Clover hay, mature	10
Corn cobs	2.5
Corn	8.7
Corn silage	2.3
Grass Silage	4
Oats	12
Prairie hay	5.5

DAILY PROTEIN REQUIREMENTS

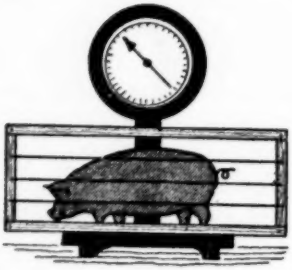
Fattening yearling cattle

Weight	Protein
600 lbs.	1.8 lbs.
800	2.2
1,000	2.6
1,100	2.7

Fattening calves

Weight	Protein
400 lbs.	1.3 lbs.
600	1.8
800	2.0
1,000	2.2

Performance Testing Can Improve Swine



The loin-eye measurement and other factors play a key role in performance testing . . .

Condensed from The Berkshire News

Terry R. Greathouse,
University of Illinois

A DETERMINED group of hog producers are erasing any lingering doubts about performance testing's value.

This group, the Illinois Swine Herd Improvement Association, has just released five years of data their swine testing stations recorded on some 2,000 boars.

The record reveals that (1) backfat thickness was significantly reduced, (2) average daily gains increased, and (3) feed efficiency improved considerably.

This record clearly proves that selective breeding, based on performance testing, can help farmers improve hog gains and efficiency. It also shows that selective breeding can produce hogs yielding meatier carcasses to meet the demands of today's consumers.

Here's the summary of the five-year record as compiled by this group and the University of Illinois:

Year	Av. Daily Gain	Feed Conversion	Backfat Thickness
1955–56	1.76 lb.	336 lbs./100 lbs. gained	1.37 inches
1957	1.77 lb.	332 lbs./100 lbs. gained	1.33 inches
1958	1.87 lb.	295 lbs./100 lbs. gained	1.24 inches
1959	1.75 lb.	302 lbs./100 lbs. gained	1.16 inches

Readers will immediately note 1959's drop in average daily gains. This drop possibly resulted from unusually severe cold weather during the test periods.

Daily gains did not show the spectacular improvement the other two factors did. The reason why is not completely clear. But the small improvement still has significance. For a mere 1-10 pound increase in daily gain saves about six days time in growing a 200-pound market hog.

Reprinted by permission from The Berkshire News, 601 W. Monroe St., Springfield, Illinois

Feed efficiency has shown improvement after five years of testing. The slight drop in 1959 is probably also due to the cold weather.

Farmers will agree, however, that 302 pounds of feed for 100 pounds of gain marks a big improvement over 336 pounds. Let's see what the improvement means in dollars and cents.

Consider that feed costs 3 cents a pound. The producer then saves 3 cents for each pound of feed the hog saves in gaining 100 pounds. On a 200-pound hog, this saves 6 cents. Multiply the 6 cents by 34 pounds of feed saved and the answer is $2.04.

The feed conversion ratio has dropped primarily through selection. For the protein content of the complete ration has been a steady 15 percent throughout the entire five-year testing period.

Backfat Thickness Drops

The record shows that backfat thickness registered the most significant improvement. By 1959 it had dropped to 1.16 inches. This measures a little more than 2/10 inch narrower than 1955's measurement of 1.37 inches.

To some persons this may not seem like much. But remember that one inch of backfat has value of $2.66.

If No. 1 hogs are worth 40 cents more per hundredweight than No. 2 hogs, then each 1/10 inch of backfat reduces the hogs' value 13 cents per hundredweight. On a 200-pound market animal, this adds up to 26 cents.

So the 2/10 inch reduction is roughly equivalent to 52 cents more value per hog. If a farmer sold 100 hogs, the 2/10 inch reduction would quickly add $58 to his pocket.

During the five-year period, the workers actually recorded data on 17 traits of the boars. But only these three are reported. They are considered the most important due to their genetic and economic value.

All three are highly inheritable: average daily gains are 30 percent inheritable, feed efficiency 30 percent, and backfat thickness 45 percent.

So a top-notch boar who rates high in these three categories will naturally pass along these characteristics to his offspring.

The test stations also analyzed 25 traits on a littermate barrow or gilt of each boar during the test period. These animals went through the same feeding trials, then were used to obtain carcass data. Information derived from a barrow or gilt carcass indicates what type of carcass the littermate boar will produce in his offspring.

Here's the report on the three most important carcass characteristics measured.

Year	Backfat	Carcass Length	Loin-eye Area
1955–56	1.58 inches		3.80 inches
1957	1.55 inches		3.59 inches
1958	1.47 inches	29.59 inches	3.98 inches
1959	1.37 inches	29.78 inches	4.22 inches

This record easily shows the tremendous strides made in reducing backfat thickness.

Carcass length is not reported for 1955-56-57 since all stations did not measure it.

The loin-eye measurement serves as a yardstick to determine the total lean meat in the carcass. Since the accuracy of the loin-eye measurement is greater than any other carcass measurement, it's considered the most important.

Sell Boars After Testing

The Illinois Swine Testing Stations raise most of the boars they test. After tests are completed, boars are sold through private treaty or sales. Buyers can examine the complete performance record of each boar up for sale.

In the past few years, the majority of boars have sold to purebred breeders. But an increasing number are going to commercial producers who realize the value of performance-tested boars siring their pig crops.

Weights of Various Feeds Per Cubic Foot

Feed	Lbs. Per Cu. Ft.
HAY: Loose	4
Baled	12
Chopped	10
STRAW: Loose	3.5
Baled	9.5
CORN: Ear	28
Shelled	47
WHEAT	48
OATS	27
BARLEY	40

Should I "Go Bulk"?

Both the advantages and disadvantages are covered in this article . . .

Condensed from American Agriculturist

R. D. Aplin

"SHOULD I install a bulk tank?"

Only you as a dairyman can answer this question. But there are certain factors you should consider in making the decision. The purpose of this article is to discuss these considerations.

Cost of Tank and Installations

The purchase and installation of a bulk tank necessitates a sizable capital investment, but it may be a very good investment.

Operating Costs

A dairyman can expect higher electric bills with a bulk tank than a can cooler because he will be cooling his morning's milk as well as his night's milk. Because of the costs associated with a larger capital investment and higher electric bills, most producers have higher costs of cooling and storing milk with bulk tanks than with can coolers.

On-Farm Savings

A dairyman realizes some direct savings on the farm to help offset the added costs of using a tank. On-farm savings result from the elimination of 1 or 2 sets of cans and from the milk buyer standing the loss due to stickage. No savings in labor should be expected from the installation of a tank itself. In fact, the time required to do chores probably increases some for a farmer who dumped milk into 40-quart cans right behind the cows before he had a tank. A farmer who combines a pipeline milker or a pumping station with a bulk tank is likely to realize significant additional savings—primarily in labor.

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Production Needed For Tank to Pay for Itself From On-Farm Savings

On-farm savings are not adequate to cover the higher costs many producers have with bulk tanks. Research indicates that a farmer must ship from 375,000 to 400,000 pounds of milk a year to have the direct savings on the farm pay for the added costs of using a bulk tank instead of a can cooler.

Present-Day Premiums for Bulk Milk

Today, farmers with bulk tanks are receiving premiums which generally much more than offset the higher costs of having a tank instead of a can cooler. Farmers with bulk tanks are realizing 15 to 40 cents a hundredweight more for their milk than are can producers. This may be in the form of a cash premium, free hauling, a "13th check," or some combination of these.

It is important that dairymen understand why such sizable premiums are being paid for bulk milk. Today's so-called "bulk premiums" result from competition for milk among dealers and cooperatives. In reality, it is a "competitive premium", which is being paid by plant operators to obtain an additional supply of milk or to keep from losing an existing supply. If a handler's volume were reduced by losing a portion of his supply to bulk buyers, he would have markedly higher costs of receiving and obtaining milk.

Bulk milk has brought savings to a few dealers—those who have increased their volumes as a result of bulk. But handlers, for the most part, are not realizing savings in the costs of handling bulk milk to compensate them for the premiums that they are paying.

While receiving milk both in cans and bulk, there are no significant savings in plant operating costs. In fact, during the initial stages of conversion from cans to bulk, a plant operator may even have slightly higher receiving costs.

The reason some boys don't follow in father's footsteps is that the old man didn't make tracks.

In thinking about present-day premiums, we should also keep in mind that premiums have been paid on a relatively small volume of milk—although it is becoming larger every day. Moreover, producers who have already shifted from cans to bulk are commonly among the more desirable producers from the milk buyer's viewpoint. They are generally large shippers and well located with

respect to roads and other producers. Some of these producers received better than average prices when they shipped in cans.

Premiums in the Future

Premiums will eventually decrease. When a plant operator closes his can deck and receives only bulk milk, he will realize some significant savings. But the savings that will be realized in the costs of marketing milk in bulk instead of cans are not as large as the premiums now being paid. Since these savings in the costs of handling milk are the primary source of p r e m i u m money, premiums can be expected to decrease.

As handlers continue to handle more and more bulk milk, the incentive for them to try to reduce the amount of the premiums will become greater, because they will be paying them on a larger quantity of milk. Moreover, as the costs of obtaining milk from other sources d e c r e a s e s (handling charges decrease—for example) and as some plant consolidations occur in an area, premiums are likely to soften. In short, competition will not force handlers to continue paying premiums of the present magnitude over time.

We don't know when or how fast premiums will decrease. The premium situation will vary from one area to another, largely depending on the degree of competition for milk. Premiums are likely to decrease sooner in a situation where there is plenty of milk than when there is a tight supply.

Costs of Marketing Can Milk

Thus, when conversion is nearer completion, premiums paid for bulk milk will decrease. But a dairyman should consider what it will cost him to market his milk in cans after many of his neighbors shift to bulk. Can hauling rates will probably increase because many of the larger producers will have left the can routes and milk may have to go farther to reach a can deck.

Consequently, in some instances, the difference between the prices farmers will realize at their farms for can and bulk milk may continue to be as large as it is today. This does not mean, how-

How large should farm fence posts be? Line posts should be 4 to 6 inches in diameter; corner posts 6 to 8. Split posts should be at least 5 inches. Set wooden posts 2½ feet in the ground. When building hog fences, place one strand of barb wire 2 inches above the ground. Place woven wire 2 inches above the barb wire. Hogs will not root around barb wire. Also, if barb wire should rust, it can be replaced much cheaper than the woven wire.

ever, that farmers will be receiving $.20 or $.35 a hundredweight more for their milk than they would have if there were no bulk milk. Rather, it means that they may receive that much more than their neighbors who continue to ship in cans.

Should I Install a Bulk Tank?

Only the dairyman can answer this question for himself. We cannot make any blanket recommendations. In making his decision he should consider the physical setting of his dairy, the length of time he plans to stay in dairying, alternative uses of his capital, and the like. Many farmers are finding that switching to bulk was a good move for them. A bulk tank may or may not make sense on a particular farm, but it deserves consideration soon.

Producers should keep one other fact in mind. The farmers who have already installed bulk tanks are receiving substantially higher prices to help pay for their tanks. Those who wait until the conversion from can to bulk assembly is nearly complete will not benefit from these higher prices.

A dairy cow is fed about three pounds of grain—plus hay or other roughage—to produce 10 pounds of milk. And when we eat a pound of pork, we consume in effect six pounds of grain, mostly corn.

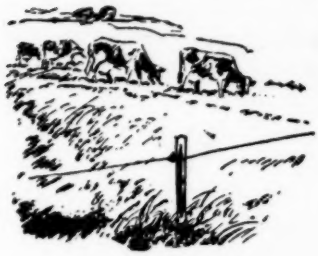
Sunday Is Salt Day

According to a story seen in a number of newspapers a herd of five cows pastured near a country home were given a ration of salt every Sunday morning. Of course, a handful of salt to a cow is as tasty as a bar of chocolate to a child and the cows began to look forward to their Sunday salting treat.

After a while the cows began to anticipate the salt. During the week, when milking time came around the cows had to be rounded up, but on Sundays these same cows came voluntarily toward the house and stood about with an air of expectation.

While this Sunday salt provides a pleasant story it must be remembered that cattle, as well as other livestock should have free choice salt available at all times for health and efficient production of milk, meat and wool. —*Salt Digest*

Birdsfoot Trefoil Still Looks Good!



A birdsfoot-bluegrass mixture yields excellent forage during midsummer, when pastures decline . . .

Condensed from Crops & Soils

H. D. Hughes and *J. M. Scholl,* Iowa Agricultural Experiment Station

BIRDSFOOT trefoil is a valuable pasture legume, comparing favorably with alfalfa and having some advantages of its own.

Yet this legume has generally not been widely accepted and used in many parts of the country where it is adapted.

What are the reasons for this lag in acceptance? And, what are the future prospects?

Present strains of broadleaf birdsfoot trefoil *(Lotus corniculatus)* are adapted for an area that extends from New England through the midwest. The southern boundary of this area passes through the southern parts of New Jersey, Maryland, Ohio, Indiana, Illinois and Missouri. It is not adapted to conditions west of Missouri, being difficult to establish in areas of low rainfall, and its northern limits are not fully determined.

The other area of strong trefoil establishment is in the Pacific Coast states. There the narrowleaf species *(Lotus tenuis)* leads in importance.

From the Central Corn Belt eastward, birdsfoot is recommended as a pasture legume, especially when the pasture is to persist over a period of years. In the Eastern states it is also recommended as a hay legume, particularly on soils not suited for alfalfa or clovers. It is especially suitable for hayfields that are expected to last for a long period.

Birdsfoot does well on the heavier, poorly-drained soils and on steep, rolling lands. After considerable research, nearly every state in the areas where birdsfoot is adapted has recommended it as an important legume, especially for pasture production.

Summarizing the d e s i r a b l e characteristics of birdsfoot trefoil: (1) it grows on a wide variety of soils, with high tolerance to low

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fertility and acidity; (2) it has a deep root system, which enables it to withstand both dry weather and heaving; (3) it is a strong-growing perennial that provides good palatable pasture during hot summer until late fall; (4) bloat is no problem with animals grazing trefoil; (5) it equals alfalfa in feeding value; and (6) once established it remains in good balance with adapted grasses year after year.

Surveys conducted throughout the trefoil growing area in 1958 indicate two main reasons for the slow acceptance of this legume. One is the high cost of adapted seed. The other, and probably the main reason, is the difficulty of establishing a new stand of birdsfoot.

A third, but considerably less important problem has been the failure of birdsfoot trefoil to persist under certain conditions. The reason for this has not always been clear. However, the use of the wrong varieties, improper grazing practices, and inadequate fertilization have been responsible in some cases. Occasionally, disease is a factor too.

The problem of high cost of domestically-produced seed is being solved. Better methods of seed harvesting have helped, and the acreage harvested for seed each year has increased at a tremendous rate. Seed production in New York, Vermont, Minnesota and North Dakota is particularly important, with a somewhat smaller volume of seed coming out of Iowa, Michigan and some of the Western States. Adapted seed is becoming more available each year and at a lower price.

The relatively high price of U. S.-produced seed has resulted in large imports of relatively low-priced seed from Europe—mostly from Italy and France. Although seedlings of the European type of birdsfoot are more vigorous and easier to establish, they are less winterhardy than the New York types. Important characteristics of the European type are its erect growth, somewhat resembling the growth of alfalfa, and its rapid recovery after harvest. In much of the East, where there is considerable interest in birdsfoot as a hay legume, the European type is considered with favor. The Viking and Mansfield varieties, from the Cornell and Vermont Stations, are improved varieties of the European type. They are somewhat more productive and winter hardy than the latter.

No problem will go away just because its feelings are hurt at being ignored.

Under continuous grazing, stands of the European-type

birdsfoot have often thinned out rather quickly. This is in marked contrast to the results obtained with the Empire type, which has persisted in pastures year after year, even when grazed continuously and closely.

Many of the seeding failures in establishing birdsfoot are due to the use of incorrect seeding and management practices. Birdsfoot seedlings are relatively slow growing and unable to compete with fast-growing seedlings. In many cases, birdsfoot is seeded in mixtures where it has little chance of becoming established because of severe crowding by more vigorous seedlings, especially the weedy grasses. With our present knowledge of this legume and its requirements, seeding failure need not be a serious problem.

Enemies are the heritage of the successful. Nobody envies a failure.

Most birdsfoot failures have been the result of seedling competition, where the birdsfoot was seeded in mixtures with fast-growing legumes and grasses or in situations where weed competition proved too severe. Experiment stations in the Northeast and North Central States have listed the following practices as favorable to establishment.

(1) Seed inoculation, using two to three times the usually-recommended amount of specific trefoil inoculant and some type of adhesive material as a "sticker."

(2) A firm well-prepared seedbed, with good distribution and shallow coverage of the seed.

(3) Pasturing off the small grain companion crop or cutting it early for hay or silage. Eliminating the companion crop, or greatly reducing its rate of seeding is sometimes desirable.

(4) Seeding no other legume with the birdsfoot, and using a low rate of seeding for any associated grass.

(5) Seeding in the spring, as contrasted with later summer seeding.

(6) Controlling weed competition with chemicals or other means.

(7) Fertilizing according to soil tests, with particular emphasis on phosphorus, both at seeding time and regularly thereafter as needed.

(8) Banding seed, with the seed placed immediately above a band of fertilizer.

The use of herbicides to eliminate weedy competition deserves special mention. Several states report that this practice is particularly beneficial. Fortunately, birdsfoot has shown tolerance to selective herbicides that will destroy weedy grasses and broadleaf

weeds. The result has been vigorous, weed-free birdsfoot, with successful establishment assured. In addition to the herbicide research on birdsfoot establishment at the Iowa Station, similar work is reported from Connecticut, Ohio and Michigan.

In the Iowa experiments, the use of post-emergence herbicides on birdsfoot seedings has resulted in yields of as much as 2,000 pounds of weed-free dry matter in the seeding year and up to 5,500 pounds in the second year.

In addition to the usual breeding and variety comparisons, the various experiment stations are investigating inoculation techniques, methods of establishment, comparisons of different grasses when grown with birdsfoot, companion crops, dates and rates of seeding, and the effect of different cutting and grazing management practices on survival and yields in following years.

The use of herbicides to destroy existing sod in pasture renovation programs has resulted in a renewed interest in sod-seeding, especially on land that is too rough to plow.

A study to compare the Empire and Viking varieties of birdsfoot, with each variety grazed both rotationally and continuously, is being conducted in Iowa. Similar studies are also under way in several other states.

The future prospects for birdsfoot trefoil look brighter each year, as more research is completed. It has already earned a solid place among the forage crops important to livestock farming, and its stature continues to grow.

Corn Breeders Increase Oil Content

Corn breeders are juggling genes and chromosomes to make corn into a high-energy feed. And so far they have been able to increase the oil content by 50 percent without reducing yields.

Oil is 2¼ times as high in energy as is starch. A high-energy feed can mean more weight produced from each bushel of corn. In the near future high-energy corn could be speeding feeder livestock to market without raising feed costs.

Research indicates that it won't be long before high-oil corn is a real possibility. The trick is to keep the high yields and the disease and lodging resistance qualities of modern hybrids and at the same time increase the oil content. Improvement of hybrid corn oil content depends largely on the creation of new strains.

—University of Illinois

Where Stands Today's Farmer?

Getting tired of stories about the "disappearing farmer"? These facts may show these stories to be wrong . . .

Condensed from Tennessee Farmer

Dr. Webster Pendergrass, Dean, University of Tennessee College of Agriculture

THE importance of agriculture as a source of food and fiber has long been recognized. But as farmers have become a smaller segment of our population, there has been a tendency to minimize their place in the economy of the nation.

This is especially true in case of those who would attempt to measure agriculture in terms of the number of people necessary to operate our farms, rather than in terms of the production job that is being done.

Those of us closely associated with agriculture know all too well that it has grown in every respect, other than in labor requirements, and that the job being done today, and that to be done in the future, is and will be greater than ever before.

An increasing population places higher requirements on the farmers of the nation if the people are to continue to be well fed and clothed. Because of efficiencies built into the agriculture of today, farmers are able to provide for our needs. They will continue to do so if efficiency is increased at a rate commensurate with increased consumer requirements. Such is possible only under a program that provides for adequate agricultural research and education.

For a true and realistic picture of the continuing importance of agriculture, let us look at some of the facts.

Employment in Agriculture

Agriculture accounts for about two-fifths of our total employment. Seven and one-half million workers are utilized in the operation of our farms.

Six to seven million persons are engaged in manufacturing and selling farm production supplies. Ten to eleven million persons process and distribute farm products.

Size of the Farm Business

The total farm investment in 1959 was in excess of 200 billion

Reprinted by permission from Tennessee Farmer, 1529 Demonbreun, Nashville, Tennessee

dollars! In 1940, the investment per farm worker was $3,400, but by 1959 it had climbed to $20,650.

Farmers have twice as much invested in machinery as does the entire steel industry, and five times as much as the automobile industry.

Farmers spend almost two-thirds as much ($4.1-billion) for capital improvements as all manufacturers of durable goods combined ($6.6-billion).

America's Biggest Consumer

Farmers use 6½-million tons of finished steel annually. This is nearly as much as the entire automobile industry uses.

There are more than 12-million tractors, cars, and trucks on American farms. Agriculture buys more petroleum than any other industry. The rubber used on American farms would provide tires for 6 million automobiles annually.

Agriculture consumes 50 million tons of chemicals each year. Agriculture uses more electricity than the cities of Chicago, Detroit, Houston, Baltimore, and Boston.

Farmer Has Become Efficient

In the past 18 years, farmers have improved their efficiency more than in the preceeding 120 years.

In the past 20 years the amount of labor used on our farms has decreased 46 per cent, but the output per man-hour has increased 145 per cent. Farm production has increased by 57 per cent.

Farmers have increased the per-acre yield of 18 leading field crops by 71 per cent in the last 20 years.

In 1940, one farm worker provided agricultural products for 11 persons. By 1959, his efficiency had increased to the point that he was providing such products for 24 persons.

If the farm output of 1959 had been produced with 1939 farming methods, it would have cost an additional $11 billion.

If our farmers were no more efficient than those in India and China, three out of four workers in the United States would be out in the field working for their first essential—food.

The reason a lot of people do not recognize an opportunity when they meet one is that it usually goes around wearing overalls and looking like hard work.

What The Consumer Gets

The consumer is benefitting by the efficiencies in agriculture in terms of higher quality products, more built-in services, and a proportionately lower price.

For example, in 1935-39 the consumer spent 23 per cent of

his income for food. But in 1959 he spent only 21 per cent.

This isn't all—if the consumer ate the same as he did 20 years ago, he would be spending only 16 per cent of his income for food.

Food is cheaper in another way. You don't have to work as long to get it. Here is what one hour of factory labor would buy in 1935-39, in comparison with 1960:

7 loaves of bread then — 10 loaves now.

2½ pounds of chuck roast then — 3 pounds now.

2 dozen eggs then — 3 dozen now.

5 quarts of milk then — 8 quarts now.

2 dozen oranges then — 2½ dozen now.

8 Cans of tomatoes then — 11½ cans now.

What the farmer gets doesn't affect the consumer's cost much.

For example, a broadcloth shirt costing $3.94 contains 28 cents worth of cotton. So, if the farmer GAVE the cotton, you would still pay $3.66 for the shirt!

A housedress costing $3.34 requires only 33 cents worth of cotton. A sheet costing $2.35 contains only 74 cents worth of cotton, and a pair of socks costing 50 cents, contain only 7 cents worth of cotton.

What The Farmer Gets

The farmer's portion of the retail food dollar fell from 53 cents in 1945 to 40 cents in 1958.

Although some of the decrease can be attributed to the additional built-in services provided in 1958, it cannot ALL be accounted for in this way.

In 1946, the average family spent $767 for food. In 1958, the same food cost $1,065. Out of the $298 increase, the farmer got only $30. Farm handlers and workers got the remaining $268.

During 1958, the hourly income for labor and management on farms was 97 cents, while workers in manufacturing industres received $2.18 per hour.

In 1959, the income per person for the farm population was $960. (This included government payments, income from off-farm work, and value of farm products used at home.) The income per person for the non-farm population was $2,202!

Farmers who try to save money by buying less fertilizer can cut their income faster than they cut costs. Most farmers will find that one of the best ways to meet the present price-cost squeeze is to increase the use of fertilizer on their farms. Test soils first to determine needs of each field.

Zoning To Protect Agriculture

Rural zoning can be used for or against farmers, depending on the purposes behind it . . .

Condensed from Soil Conservation

Erling D. Solberg,
Agricultural Economist

IT ONCE was an attractive and productive farm. It bore a proud name. Soils were fertile, fields and pastures were terraced and well tilled. Ponds and streams were clear. Buildings and fences were in good repair.

Today it is part of a rurban sprawl—a scattered, mixed development that is neither town nor country. Strings of houses commingled with stores and weed-grown lots border the roads. There are gas stations at the crossroads. Other houses are widely scattered among the remnants of fields that did not sell. Some of these fields, now idle, have reverted to weeds and brush. Soil erosion is prevalent.

The change began when the owner sold his front lots. The prices received were high compared with the value per acre of the farm as a whole. Houses were built. Later, other farmers sold their frontages. The change continued as the years went by. Growth was haphazard. Many farms were bypassed and "trapped" in areas that are largely urban. Subdivisions farther out became residential islands.

Rurban sprawl can be found in most of our States. It is generally a byproduct of rapid, unguided community growth. Sprawl is a prolific producer of problems that are left behind as unwelcome legacies for the community, for the new suburbanites, and for the remaining farmers.

Sprawl inflates taxes for farmers and nonfarm residents alike; it increases the cost of providing the needed roads, schools, and other public facilities and services.

Sprawl wastes farmland. Preliminary estimates indicate that every time unplanned urban growth converts an acre of farmland to urban uses, it wastes, on the average, three more agricultural acres. Two of these acres go out of farming into a ripening stage for possible later nonfarm uses. The other acre remains idle.

If in addition to rurban sprawl

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there is an unwise mixture of land uses — agricultural, residential, commercial, and industrial—serious conflicts between incompatible land uses may result. From the viewpoint of farmers who continue to farm in the area, these conflicts may be separated into three groups.

First, there is a shifting to farm taxpayers of development and public service costs, among which are outlays for new roads, streets, schools, parks, water mains, sewers, and other public facilities that are needed by their nonfarm neighbors, but which the farmers neither need nor want.

Second, there are adverse effects of nonfarm land uses that damage the agricultural plant -and operations. These include the diversion from agriculture of the most level, the least erodible, and the most fertile land. Rurban expansion often takes such highly productive land first, even when other suitable land is available for non-farm uses.

Other urban-induced damages result from depletion and pollution of ground waters; more frequent flooding of farmlands because of rapid runoff from roofs and streets; pollution of streamflows; injury to crops because of air pollution; and trespass hazards, particularly at harvest time.

Finally, problems are created because of objections of nonfarm people to certain normal farming activities. There are objections to smoke from smudgepots, spraying and dusting of tree and field crops, noise and dust from farming activities, and unpleasant odors and flies from livestock and poultry operations. These objections may result in the regulation of farming and feeding practices by health authorities.

What of the future? A growing population and better roads and more cars promise a wider distribution of population.

Population estimates for 1975 for the continental United States range from a low of 207 million to a high of 230 million. Estimates for the year 2000 range from a low of 261 million to a high of 361 million people.

If you want to be successful, it isn't just enough to keep your feet on the ground . . . you've also got to keep them moving.

Express highways built within the next few years will extend commuter zones. Space must be found for community growth, for new homes, for business centers, and for industrial sites. Does this mean more rurban sprawl with its waste and its land use conflicts? Or can there be a more orderly community growth, perhaps with surburbias and farms side by side?

A workable solution has been affected by many burgeoning communities. They use planning and zoning tools to keep apart land uses that are likely to conflict. First, an overall plan of optimal land use is prepared. Then separate districts are established for agriculture, for residences, for business, and for industry.

Agricultural z o n i n g districts may be grouped into three main classes.

Those of the first class enclose agricultural areas from which objectionable business and industrial activities are excluded. In these agricultural zoning districts, all kinds of farming activities, except hog farms for feeding garbage and offal, are usually permitted. Also allowed are farm and nonfarm residences, home occupations, schools, churches, and other facilities that are appropriate in residential districts. Other uses that are sometimes allowed are plants for processing and storing agricultural products, earth extraction industries, public utility facilities, and airports.

With some slack months still ahead, plan to spend some time every day on your farm records. It may yield more hourly income to you than your work in the barn or feedlot.

Most other uses and activities are prohibited in these farm zoning districts, especially wrecking yards, taverns, public dance halls, automobile courts, and trailer camps.

In the second class of farm zoning districts, essentially the same kinds of regulations are applied, with one important exception—the requirement of large minimum lot or tract sizes. Minimums ranging from 1 to 5 acres or more are required at times to discourage residential development and to reserve the land in these districts for agriculture.

In order to further these objectives, the minimum size of tract must be large enough to discourage purchase for residential development, and to serve the primary purpose of the district, which is agriculture. Many types of farming require only a few acres.

In farm zoning districts of the third class, a more direct approach is used. Within these districts, only agriculture, a few related activities that further the use of land for farming, and certain public and semipublic uses are permitted. All other uses, including nonfarm residences are excluded. As an added safeguard, minimum tracts of up to 10 acres are required.

Farmers in California have been especially pressed by rurban

expansion in recent years. In self defense, they developed the third class of district described—the exclusive-type farm zoning district.

The primary land use in exclusive agricultural districts is farming. Other permitted uses are secondary and accessory. Residences, for example, are allowed as accessory uses to permitted agricultural uses.

Zoning regulations applied in exclusive-type farming districts are designed and used to protect agriculture. Land uses which require additional roads, schools, utilities, and other expensive public facilities and services are excluded. The same excluded land uses have been the main source of the objections voiced against normal farming practices and the main reason for conversion of fertile soils to non-farm uses.

A dozen or more counties in California have created exclusive agricultural districts to protect a variety of agricultural areas. These include areas in orchards, truck crops, and general farming, and areas used for dairying, poultry raising, and nurseries and greenhouses. The districts differ from each other, and the regulations applied vary with local conditions and needs. Districts range in size from a 35-acre zone used for growing field and greenhouse flowers to a district that contains 175 square miles and is devoted to several types of farming.

Agricultural zoning districts usually do not call for regulation of farming activities. Instead, conflicting nonfarm uses are excluded.

Exclusive-type farm zoning districts are established on petition by the farmers concerned. Before final action by the county board, careful studies are made, the recommendations of the local planning agency are submitted, and public hearings are held.

Chicken-turkey hybrids have popped up unexpectedly in USDA research projects. It's the first time on record that successful crosses have happened between chickens and turkeys. But no commercial value is foreseen for the hybrids. They lack vigor, tend to be malformed and, like mules, can't reproduce.

Productivity of soils is a major consideration in zoning land for agriculture. There is little point in reserving the poorer soils for agriculture.

When alternate lands of differing soil capability are available, and both are suitable for development for nonfarm uses, the community has a choice.

Benefits from reserving the bet-

ter soils for farming will accrue to both rural and urban people. Benefits will go to people on the land from having an efficient and highly productive agricultural plant.

Other benefits will accrue to the community at large. Agricultural greenbelts can break up continuous urban development, lower overall population densities, and reduce pressure on travel arteries and on other public facilities. Other benefits may result from reducing runoff, avoiding flood damages, reserving natural storm drainages, protecting watersheds and wildlife, and by avoiding sprawl-inflated costs of public services.

A technological revolution, along with a population explosion, is carrying new frontiers in rural communities. New urban forms are being shaped. Yesterday's sharp separation between town and country has been blunted. Farmers and city folk are now neighbors. Ways must be found to permit farms and suburbias to prosper side by side.

Know The Real Interest Charge

Today many folks buy things on the installment payment plan and believe that they are only paying 5% or 6% interest. In reality they are paying much more in true interest because interest is charged on the full amount of the loan, rather than the unpaid balance.

Here's a formula that will give you the true interest rate on an "installment plan" loan.

$$\frac{2 \times \text{total finance charge}}{\text{The original loan} \times \text{no. of years}} \times \frac{\text{Number of payments}}{\text{Number of payments} + 1} = \text{Actual interest rate}$$

For example: Suppose you borrow $1,000 on installment at 5% interest. The lending agency figures the total finance charge at $50 (5% of $1,000). However:

$$\frac{2 \times \$50}{\$1{,}000 \times 1} \times \frac{12}{13} = 9.2\%$$

By working through the formula on this loan we find the actual interest rate to be 9.2% instead of 5%. Knowing the real rate of interest you're paying will give you a better idea about when you can afford to use an installment loan. —*Farm Business Letter*

Will Machines Control Farm Size?

How big will farms get? Studies of crop farms indicate that economies have been minor beyond the farm size where large-scale machinery is used near capacity. Often this point is reached when the operation can be handled by one or two men . . .

Condensed from Better Farming Methods

Gerald W. Dean, University of California

• THE continuing trend toward larger farms is viewed with considerable interest — and sometimes with alarm — by a large segment of both the farm and non-farm population.

Within agricultural and political circles, the following questions are raised repeatedly: Will farm size continue to increase? If so, why? How large might farms eventually become? What factors, if any, will slow or stop the trend toward larger farms? What can the individual farmer do to combat, take advantage of, or "live with" large scale farms? Would the demise of the "family farm" be a "social loss" to the nation?

What Are The Trends?

First off, it would seem wise to review past changes in farm size. Here's a bird's eye view of changes in numbers of commercial farms from 1930 to 1955. (1960 Farm Census figures are not yet available.)

The total number of commercial farms is divided into three size categories by the Census: "Large-scale farms" having sales over $25,000; "family-scale farms" with sales of $1,200 to $25,000, and "small-scale farms" with sales of less than $1,200. All categories of farms declined steadily in numbers from 1930 to 1950.

Between 1950 and 1955, however, the picture changed drastically. Although "family-scale farms" continue to decrease moderately the number of "large-scale farms" increased sharply (about one-fourth) while the number of "small-scale" farms dropped off by about 40 percent.

Other common measures of farm size, such as acres per farm, show the same "spurt" between 1950 and 1955. For the United

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States as a whole, average farm size increased about 20 acres per farm between 1940 and 1945 and between 1945 and 1950, but increased 27 acres per farm between 1950 and 1955.

The above figures emphasize several points.

- First, the long-term trend to fewer, larger farms has been accelerated in the past decade, primarily from pressures of the farm price-cost squeeze.

- Second, although "large-scale" farms (as defined by the Census) are increasing rapidly percentagewise, they still represent a small proportion of U. S. commercial farms (4 percent in 1955).

- Furthermore, a large portion of the "large-scale" farms are "family farms" in the sense that the farm family controls and manages the operation. Thus, large scale "factory-type" farms are still the exception rather than the rule in American agriculture.

The question of "optimum" or "most desirable" farm size is an emotion-packed issue for many people, stemming primarily from conflicting views on the goals of our farm size policy.

Agricultural policy goals, as they relate to farm size, fall generally into two categories:

(1) Resource efficiency.

We want farm sizes which permit agricultural resources to be used as efficiently as possible. By this we mean obtaining the desired agricultural output from as few resources as possible. For the individual farmer, a convenient measure or resource efficiency is his average cost per dollar of output.

(2) Social considerations.

We want farm sizes which permit a "fair" or "equitable" distribution of income. Most people do not want a society where the "rich get richer and the poor get poorer." In addition, some people feel that the rural family is the backbone of the nation and therefore that the small family farm is an institution which warrants protection.

These two goals are obviously closely related. Intelligent decisions with respect to the social issues hinge importantly on knowledge of the relative efficiency of

Success is not so much a matter of talent as of concentration and perseverance.

farms of different sizes. We will concentrate on the question of resource efficiency and abstain from the question of social values.

A number of research studies are available to give us some measure of the efficiency of farms of different sizes, using cost per dollar of output as a measure of

efficiency. In turn, these studies provide some idea of which farms will increase in size and how much.

Cost-Size Relationships

Only a few studies of a few areas and types of farming can be considered here. However the results are sufficiently consistent to suggest a similar pattern elsewhere.

Studies of crop farms in Iowa, Nebraska, Oregon and California indicate that cost economies have been relatively minor beyond the farm size where large scale machinery is used to near capacity. In some areas, this point is reached where the operation can be handled by one or two men and little or no hired labor — such was the case in the Iowa and Nebraska studies.

Sign on a country road "Drive carefully; there isn't a hospital within fifty miles".

In other areas, such as many of the irrigated areas of California, this point is not reached until the operator hires considerable additional labor.

For example, compare two recent studies:

(1) In the Iowa study of cash crop farms, costs per dollar of output declined sharply up to 160 acres, then moderately to 240 acres with little or no cost economies thereafter. The conclusion was that one-man units of approximately 240 acres could continue to compete on a cost basis with larger farms.

The gross income or sales from such a 240-acre cash crop operation would be approximately $20,000, with essentially all labor furnished by the operator and his family.

(2) In a California study of cash crop farms, costs per dollar of output declined significantly for farms up to about 700 acres, with little or no further economies thereafter. In this case, the gross income for a 700-acre farm was about $170,000 with hired labor expenses of nearly $50,000 per year.

Results Are Consistent

These results emphasize that efficient farm size cannot be specified easily in terms of operator labor, areas operated, or gross sales. However, the results do indicate a consistent pattern. As farm size is increased, costs per acre or per dollar of output decline sharply at first, then more gradually and finally reach a point where they essentially "level off."

Farms which reach this "leveling off" point of approximately constant per acre costs are just as efficient in use of resources as larger farms. However, with the

price-cost squeeze, these farmers may need to expand size merely to maintain family incomes.

Naturally, the strongest economic pressure is on the extremely small units with high per unit costs. As farm prices decline and costs rise, these farms must either expand or be squeezed out of business. Economic forces will continue to force consolidations and expansion leading to further increases in average farm size. There will certainly be pressure for smaller farmers to reach economic size.

Yet because per acre costs are approximately constant over a wide range, we can expect a continuation of a wide variation in farm sizes, with little tendency for farm size to concentrate at one "optimum" acreage.

The research studies discussed above suggest that the most important single economy of large scale production is near-capacity use of large machinery. This phenomena is commonly termed "spreading the fixed costs." For any machine, certain annual costs such as depreciation, interest, taxes and insurance are relatively fixed. Operation over more hours or acres reduces the cost per hour or per acre.

Another economy commonly gained with increased size is in price discounts from buying fertilizers, sprays, feeds and other inputs in large quantities. Other sources of cost economies are less easy to specify. In some larger operations, labor specialization may be important. For example in some extremely large California farms, the individual operator as a "jack-of-all-trades" is being replaced by a number of specialists such as mechanics, milkers, veterinarians and accountants who concentrate on different parts of the farm business.

What Limits Farm Size

The factor most frequently mentioned as a limitation on farm size is management. With continued expansion the problems of making key decisions, coordination and supervision multiply and eventually may become too much

If you can't have the best of everything, make the best of everything you have.

for the average manager to cope with effectively. In other words, some economists argue that lack of communication and control, "red tape" and various forms of "slippage" eventually increase costs per unit of output.

Another important factor limiting farm size expansion is the uncertainty inherent in farming. Even if management is adequate, the operator may hesitate to expand for reasons of risk and un-

certainty. Ordinarily, expansion in size requires borrowing capital and greater risks. Individuals who already have an efficient sized operation and satisfactory incomes tend to "draw in their horns" and "play it safe" in order to protect their asset position accumulated over time. High income taxes for large farmers may also reduce the incentive to push to extremely large sizes.

What Can the Individual Farmer Do?

In the face of the economic facts of life concerning farm size, what can the small operator do to survive?

First, the operator should carefully evaluate his own cost and returns situation and income needs in relation to similiar farms to determine if he has a "size" problem. If inadequate size is a problem, the obvious step, if possible, is to obtain more resources and expand to an efficient size. In many cases, this step is impossible in the near future because of capital limitations. Small farmers almost invariably know they are "too small," but often cannot increase size because of capital or other limitations. Here are some methods presently being used by some small farmers to survive:

There are a lot of good ways to become a failure, but never taking a chance is the most successful.

- Full-time or part-time off farm work. Often small operators are underemployed and can use excess labor in off farm work to earn wages for family living or for capital accumulation and future size expansion. Many small operators find better income opportunities in off-farm work and eventually sell or rent the farm to a larger operator.

- Custom work. Small operators often reduce costs by hiring certain jobs on a custom basis to avoid ownership of expensive machinery. Several variants of this idea are possible such as owning the high-cost equipment but doing custom work for others, owning machinery in partnership or exchanging machinery services with neighbors.

- Specialization. Diversification as an income stabilizer is often overrated by farmers. Often they would be better off to specialize in particular crops or types of livestock in order to attain efficient size in a single enterprise.

It should be mentioned that diversification of a single enterprise through time is often possible in order to attain efficient size and still maintain a stable income. For example, a livestock producer may concentrate on hog produc-

tion, but spread marketings through the year to reduce price risk. Or a peach grower may plant several varieties with different maturity dates in order to reduce price risk.

● Tenancy. An individual with limited capital can often use that capital most effectively by renting a fairly large acreage. Too often, small farmers sink their funds into buying land and have too little working capital left to operate the land effectively.

Just About Pigs . . .

Let's treat the pig with a little more respect.

To begin with, his age merits him a deferential nod. You see, the hog is 39 million years older than man.

Maybe the dog is known as man's best friend, but the hog is certainly the oldest. Sometime between 7000 and 3000 B.C., primitive man began to adapt the wild hog to fit his needs and the animal has been serving man and adjusting to his ways ever since.

Here are some other interesting items about one of the world's most under-rated animals:

In certain parts of the British Isles, a slice of bacon eaten by a bride and groom was believed to insure happiness for a year.

In Latvia, the planting of a pig's tail insured long ears of barley; and in some parts of Germany, planting ribs performed similar magic on flax.

The pig is a pioneer. He arrived in America almost a century before the pilgrims — as part of Hernando De Sota's expedition which landed in Florida on May 25, 1539.

Furthermore, the pig is:

1—The most intelligent domestic animal in America, according to a study made by Cornell University.

2—Adaptable to the extent that he will accept any environment forced upon him through ignorance, although he prefers a clean lair.

3—A perfect conservationist, will eat whatever his master provides.

4—A prolific meat-making machine.

—Western Livestock Journal

New For You

BY THE EDITORS

When writing to manufacturers, please mention you saw their product mentioned in the Farmer's Digest "New For You" page.

★ ★ ★

A dramatic new concept in manure spreaders is a 130 bushel *flail type* PTO spreader by New Idea. Free-swinging steel flails mounted on a single rotating shaft finely shred manure and spread it in a uniform band 80 to 90 inches wide. According to New Idea, the new spreader handles frozen or sloppy manure without build-up in sub-zero weather and the covered, undershot action cylinder discharges manure low where wind can't carry it. For more information write to New Idea Farm Equipment Co., Coldwater, Ohio.

★ ★ ★

A custom-engineered lubricating oil blended specifically for liquified petroleum gas and natural gas engines is announced by Lubrication Engineers, Inc., 2809 Race Street, Fort Worth, Tex. Developed after an intensive research program to determine the exact lubrication requirements of LPG and natural gas engines, the new LPG engine oil is available in weights ranging from SAE 10 to SAE 50. For more information write to the above address.

Porta-Thaw is a small transformer that makes it possible to thaw frozen pipes by using the ordinary domestic AC electric circuits — 110 or 220 volts, single phase, 50 or 60 cycles, and it can be carried by one man. It is complete with a 10 foot power cable with plug and receptacle and two 20 foot thawing cables with lugs and pipe clamps. The case measures only 16⅜" x 11½" x 10-⅜" and the unit weighs 63 pounds. Convenient carrying handles are provided.

The transformer is rated at 300 amps., 10 volts on 100% duty cycle. Four output terminals of long-life bus-type provide for three thawing steps — high, medium and low. Operating instructions are permanently mounted in plain view, on top of the case. There are no electrical connections between the power line and the output terminals making it as safe to operate as a household appliance. For more complete information, write Hobart Brothers Co., Troy, Ohio.

★ ★ ★

Plastic foam core building panels have been adapted for the first time to the farm building field by Wood-Fab, Inc. of Lester Prairie, Minnesota, by the use of their Dri-Lite panels.

The panels, which are surfaced with either plywood or fibreboard, have a foam core of Dylite expandable polystyrene, a product of the Koppers Company. These panels can be assembled on a mass production basis and afford greater flexibility in construction applications. Also, they are available in standard sizes, which greatly reduces the need for reworking at the site.

Dri-Lite panels offer many advantages not available before in other types of farm building materials. Although lightweight, these panels are rigid and sturdy and provide excellent insulation, as well as serving as a vapor barrier. This results in coolness in the summer and warmth in the winter for poultry and farm animals.

If you are interested write to Wood-Fab, Inc., Lester Prairie, Minnesota.

Aureomycin Increases Feeder Lamb Gains

Lambs fed 10 milligrams of aureomycin daily throughout a 61-day feeding period gained 16 percent more per day than lambs on a basal ration without aureomycin in an experiment at Iowa State University, Animal Husbandman Walter Woods reports.

However, aureomycin fed for only the first 21 days of the feeding period failed to increase the rate of gain.

Woods said another trial was undertaken with aureomycin and erythromycin but it failed to produce an increase in gain. He said it was possible the disease level was lower in that second trial than in the first. However, he added, it appears that if there is a high enough disease level in the lots to cause a response to antibiotics, it is profitable to feed antibiotic for the whole feeding period rather than for a part of the period. —*Iowa State University*

Just when we think fertilizers are either solids, liquids, or gas, the experts come up with "Suspension" fertilizers. A special colloidal clay is used to keep the plant food in suspension. The advantages seem to be:

1. Less expensive raw materials such as "wet process" phosphoric acid.

2. Total plant food analysis can be increased. We will hear more about this new fertilizer form as the season progresses.

Dwarfism In Beef Cattle

A study of an important problem with beef cattle . . .

Condensed from
The A. I. Digest

O. F. Pahnish, E. B. Stanley, and
C. B. Roubicek,
University of Arizona

THE study of dwarfism in beef cattle was started in 1948. It was found that dwarf calves vary in development with age just as do normal calves.

The characteristics which generally identify the dwarf at birth or at a very young age are: (1) a protrusion of the eyes accompanied by a glassy stare, (2) a continuous protrusion of the tip of the tongue, (3) apparent muscular weakness, (4) incoordinated movement, and (5) proportionally short legs. The length of forecannon has proven to be the most accurate method of identifying the living dwarf calf at birth.

Genetic studies were made to learn if dwarfism in beef cattle was inherited or if it was caused by faulty nutrition. In these genetic studies, cows that had previously dropped dwarf calves were mated to bulls that had sired such calves. In addition, dwarf bulls were used on normal and dwarf cows.

Carried By Genes

The results of the breeding studies have definitely proved that dwarfism is a breeding problem. It is not the result of faulty nutrition and cannot be eliminated by changing the ration or using feed supplement. The dwarf condition is due to a simple recessive gene. This means that normal appearing animals can carry and pass on the dwarf gene.

If a carrier bull is mated to a group of carrier cows it can be expected that about 25 per cent of the calves will be normal appearing and will not carry the dwarf gene, 50 per cent will appear normal but carry the gene, and 25 per cent of the calves will be dwarfs. A dwarf calf can be produced only if both the sire and dam carry the recessive gene for dwarfism. This gene is introduced

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and maintained in the breeding herd by the normal appearing carriers. Unless proper precautions are taken, the incidence of dwarfism is likely to increase appreciably in many of the herds.

Measures which can be used by the breeder to control the dwarf problem in his herd include:

1. Elimination of proven carriers.
2. Elimination of progeny of proven carriers.
3. Progeny testing of prospective sires.
4. Screening bulls prior to progeny test.
5. Establishment of a dwarf-free nucleus herd.

Bulls that have sired dwarf calves should be sold for slaughter. The proven carrier cows can be retained as a special herd for conducting progeny tests of prospective herd sires. If the prospective sire is mated to the carrier cows and produces 16 or more normal calves he is considered a non-carrier. However, if he sires even a single dwarf he can be immediately classified as a dwarf carrier and should be marketed for slaughter. Females can also be used in the test herd if they have a proven carrier for sire or dam. This type of test, however, requires a relatively large number of females to prove the prospective sire.

Don't Buy A Carrier Sire!

It is very worth while to screen bull prospects carefully before the progeny test. Study the pedigrees to eliminate bulls of known carrier parentage. Look for bull prospects from progeny tested bulls or from established dwarf-free lines. If cows are available that come from a well defined line which has not produced dwarfs, use them to establish a dwarf-free nucleus herd.

This study of dwarfism in beef cattle has pointed out the importance of complete and accurate herd records. If a breeder finds any undesirable characteristics appearing in his herd he can check his records to determine the necessary action needed to eliminate the characteristic from his herd.

Things You Should Know —

The American public has never been so well fed despite a rapid increase in population and a corresponding decrease in the number of farmers? Out of every $1,000 spent by the government for subsidies during the past 50 years, the farmer received only $5? THAT in one four-year period, 1954 to 1958, the farmer's share of the retail food dollar fell from 53 per cent to 36 per cent?

Reducing Costs In Dairying

Reduce your dairy costs wisely . . .

Condensed from Guernsey Breeders' Journal

Arthur Shultis, University of California

COST reduction in dairying is one of the ways to improve the net income of the dairy farmer. It has to be done wisely lest it reduce total income along with costs.

Net Income — The real goal of the dairyman is not lowest cost but maximum profit or net income. There is no set of recommendations for universal use in improving net income through cost reduction. Every farm is different and obtaining more profit requires an analysis of means of utilizing better the available resources—the land, climate, water, people, buildings, equipment and the dairy herd.

Reducing Cost of Milk — A reduction in the unit cost of the product—a hundredweight of milk—is the usual goal in cost reduction to improve profit. This is done largely through producing more total milk from the resources available. But even here there are places where more cows may yield the dairyman more total profit on a hundredweight of milk. This could be where he buys more expensive feed from off the farm to carry more cows. This is why so many dairy herds are increasing in size.

Enlarging the Herd. — Where more cows are handled by the same buildings, equipment and labor, the fixed or overhead costs per cow are reduced. The variable costs per cow for feed where more is purchased, and perhaps some additional labor, can easily increase more than the reduction in fixed costs. Sometimes it's more profitable to reduce the size of herd so a greater proportion of the feed is from the farm. Change in cow numbers can be tested ahead of time by comparing budgets of income and expense. Usually improving profit also requires

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an increase in average production per cow.

Improving Production per Cow — An increase in average production of milk and milk fat per cow almost always improves profit because you get more product with the same fixed or overhead costs and only a small increase in variable costs for feed. There are ways, however, in which attempts to improve average production may be unprofitable. One is by trying to buy it through selling low producers and buying strange cows at a higher price in the hope they will be higher producers. The other way is to feed more purchased concentrates than the cows need, thus increasing costs more than income. Improved production, wise culling of low producers when you have a better replacement, better feeding, and better breeding of replacement heifers through breeding your good cows with semen from proven bulls.

Reducing Feed Costs — Feed cost to the dairy enterprise is from 50 to 70 per cent of total costs, so offers the greatest opportunity for cost savings. This is where the farm value of feeds and pasture grown on the farm are charged to the dairy along with purchased feeds.

Forage — Pasturage, hay, green chop, and silage are forage, and provide digestible nutrients at a much lower cost per 100 pounds than concentrates. So a dairy herd to be profitable must receive most of its feed in the form of forage. These four forms of forage also have different production and purchase costs and can be substituted one for the other in different seasons with considerable effect on feed costs. Pasture usually has a lower nutrient cost than harvested forms of forage, so its use to the maximum possible is usually profitable.

Attaining lowest possible feed cost depends on an adequate supply of high quality forage the year around. High quality, in the forage produced on the farm, is a result of better field management and timing rather than higher costs. Proper timing of operations and harvesting and grazing are important. Proper fertilization, selection of varieties, irrigation and crop rotation usually increase yields more than costs, so result in lower costs per ton or pound of nutrients. So the first step in reducing forage costs is to look at the forage production and the inputs and the costs of producing

Belgium is the most densely populated country in Europe, averaging 655 people per square mile, or about 25 times the U. S. average.

the several forage crops and pastures. Buying hay on a quality-price basis is usually a good practice where done wisely since it results in enough increased production per ton to more than offset the higher price and makes the use of more concentrates unnecessary.

A common mistake in many dairies is failure to recognize the declining quality and quantity of feed available in pastures in the summer, or its lower use because of heat; flies, or lack of shade and convenient drinking water. Too often the dairyman allows the lower production to continue or attempts to overcome it by feeding more concentrates. In either event, cost per hundredweight of milk is increased. The better way is to prevent the drop in milk production, either by better pasture and grazing management or by supplementing with additional palatable hay, silage or green chop in the shelters or yards where the cows congregate.

Pure alcohol freezes at 125° below zero.

Concentrates — Nutrients from concentrates cost around twice as much as from forage. Yet concentrates are needed to allow each cow to reach the additional production she can attain over what she can do on good forage alone. In a herd producing 400 pounds of milk fat per cow per year, concentrates will provide around 20 per cent of the total nutrients, including those for young and dry stock, and make up 35 per cent or more of the total feed cost. Economical selection and feeding of concentrates is one of the most common ways in which dairymen have been helped to reduce their feed cost and improve profits. Some savings are available in selecting the most economical kind of concentrate to balance the roughage used in protein and in buying in bulk from the most economical source. But the biggest saving is in feeding individual cows according to production, as learned from the Dairy Herd Improvement Association, for the previous month. This is no problem on smaller dairies where the dairyman or milker knows the cows. On larger dairies it can be done by marking the cows or sorting them into strings by production.

One recommended formula is to subtract 25 from the pounds of fat produced the previous month and divide by two to obtain the pounds of concentrates to feed daily. This provides little or no concentrates to low producers and too much to very high producers, so has to be followed with judgment.

Labor Costs — In general, the problem here is to keep labor costs from increasing with higher living costs and wage rates. Under any given cost conditions, the dairyman can, however, reduce his labor cost per cow by getting more cows milked and cared for per hour of worker time. Several small improvements in work routine, building design, milking machines, and mechanization of handling feed and manure can add up to quite a saving in labor per cow. The small dairyman doing his own work has more time available for profitable use in other enterprises or in keeping better records and improving his management. Or the time saved may well be spent in rest and recreation to allow a life more like that in other occupations. On large dairies with hired milkers, the cows per man can be pushed up to around 100 with no more time and fatigue than formerly with 60. This takes good design of facilities and is a substitution of overhead costs arising from more capital invested in facilities for part of the reduction in labor costs.

Dairy Farm Analysis — The piecemeal self-treatment of symptoms to get at the problem of inadequate profit is helpful, but not as much as thorough analysis of the entire dairy farm business with outside help. The dairyman who is running behind and trying to make both ends meet by long hours of work will have little time or energy to take a careful look at his business. He gets out little and is not apt to see opportunities to improve his profit like an outside expert. Fortunately, help is available from the Agricultural Extension Services in most states and, in many cases, it is free. This form of assistance is called by different names—Farm and Home Development, Balanced Farming, and Farm Analysis. The farm family agrees with their county agent or farm advisor for a diagnosis and replanning of their business that takes considerable time and effort on both sides. They may have to attend meetings for group instruction and assistance. Other steps are to list and study their resources, analyze their present crop and dairy enterprises, discover opportunities and test changes to be made by calculating estimated budgets for the future. The family then adopts a future plan within its capacity and works toward their goal with better chances of success than they had before. They will use some of the measures mentioned, but a valuable side product will be the training in management and decision-making that will help them always.

Some Tips On How To Use Stilbestrol

Do's and don'ts for beef cattle . . .

Condensed from The Country Guide

A SERIES of experiments has been carried out by Dr. T. D. Burgess at the Ontario Agricultural College, using stilbestrol with different types of rations.

Average increase in gain has been 0.49 lb. daily or 24 per cent, with a reduction of 14 per cent in the pounds of feed required to produce a pound of gain. It has been estimated that with all types of rations the average increase in daily gains due to stilbestrol will be 16-18 per cent with a 10 per cent gain in feed efficiency.

"In the feedlot, stilbestrol may be fed or implanted and approximately the same response will be obtained," says Dr. Burgess. It is fed at a rate of 10 milligrams per head per day or implanted at a level of 36 milligrams per head. One implant will last for approximatey 150 days. With steers on pasture the implant is the most common dose. Since pasture grasses and legumes contain some estrogenic material, the level of implant is lowered to 24 milligrams per head.

Stilbestrol should not be expected to increase the carcass grade. In the Ontario Agricultural College experiments, stilbestrol had no adverse effect on carcass grade either. There was no effect on the tenderness or the moisture content of the lean either. Stilbestrol does not increase fat deposition in the animal. It must be used properly and Dr. Burgess lists the following do's and don't:

Do's

1. Administer stilbestrol either in the feed or as an implant to fattening steers.
2. Feed at the recommended level of 10 milligrams of stilbestrol per head per day.
3. In the feedlot, if implants are used, use a level of 36 milligrams per head.
4. On pasture use an implant level of 24 milligrams per head.
5. Feed properly balanced rations to ensure best results.

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The Country Guide, 1760 Ellice Avenue, Winnipeg 12, Manitoba, Canada

6. Implant or feed stilbestrol during the finishing period for best results.

7. Use only one implant if the feeding period is less than 150 days.

8. Reimplant at the lower level, 24 milligrams, if the feeding period is much longer than 150 days.

9. Follow the manufacturer's directions carefully.

Don'ts

1. Don't both implant and feed stilbestrol at the same time with the same cattle.

2. Don't expect stilbestrol to take the place of protein or any other nutrient in the ration.

3. Don't feed or implant more or less than the recommended amounts of stilbestrol.

4. Don't reimplant in less than 150 days after the initial implant.

5. Don't use stilbestrol with breeding stock.

6. Don't expect heifers to show as great an increase in gains as steers from feeding stilbestrol.

7. Manufacturers of stilbestrol implants do not advise their use in fattening heifers due to the possibility of vaginal prolapse.

8. Don't let breeding swine follow cattle which are being fed stilbestrol.

9. Don't expect maximum increase in gains unless cattle are receiving a fairly liberal ration.

Can't Do It Alone

If you use hormone implants for beef cattle don't stint on the feed and don't be in a hurry to market the cattle, advises Dr. S. B. Slen, head of animal science at Lethbridge Agriculture Research Station, Alta. (Canada).

Implanted cattle can make greater gains, but they must be given enough feed and water.

The second point to remember is that while implanted cattle gain faster, they may not finish faster. There may be a tendency to market them first, because they gain weight more quickly than the untreated cattle, but the finish may be lacking.

Nitrogen Effects On Corn

Forty to 80 pounds of nitrogen per acre on West Central Minnesota corn plants gave these results:

1. Higher corn yields.
2. Increased total crude protein in corn stocks.
3. Higher total crude protein in corn grain.

This adds up to profitable corn yields, high quality corn silage for cattle and sheep feed, and high protein grain for faster growing and fattening livestock on less corn.

How Some Farmers Accumulate Capital

A study of the factors affecting farm capital accumulation . . .

Condensed from Agricultural Banker

William Herr, Southern Illinois University

CONTROL over capital is essential for generating adequate incomes.

In fact, on many farms inadequate income can be traced directly to insufficient capital resources. Expanding control over capital resources comes by saving out of current income, by borrowing funds, and by renting additional resources. When income is already low, adding to capital via the saving process is at best a slow procedure. Thus, considerable attention usually focuses on the credit mechanism and renting resources as a means of broadening one's capital base.

In order to examine trends in capital accumulation and some of the factors affecting capital accumulation, balance sheet statements were obtained from a sample of long-term farm borrowers at each of three different Production Credit Associations in Illinois.

Data were obtained on each borrower previous to World War II, in the late 1940's, and at a recent date. Data for the two dates permit comparisons of capital accumulation during two decades. The early one extends from the late 30's to the late 40's and embraces a period in which farm prices and income were rising and generally quite favorable to agriculture. On the other hand, the second decade, from the late 40's to the late 50's was a period marred by downward price and income pressures except during the Korean War.

Trends in Capital Accumulation

Over the approximate twenty-year period the average increase in capital resources employed by the sample of 152 long-time borrowers was more than $36,000, (Table I.) estimates suggest that somewhat more than half of the increases was due to higher prices.

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Table I. Financial Progress of 152 Long-time Borrowers at Three Illinois Production Credit Associations*

	Prewar	Post war (Avg. per Farm)	Recent
Total Assets	$ 9,871	$26,387	$46,280
Total Liabilities	3,016	4,105	8,686
Net Worth	6,855	22,282	37,594
Equity Ratio	70	84	81
Acres Operated	230	288	330
Owned	67	121	164
Rented	163	167	166
Animal Units	18	22	27

*The three associations included in this study have offices at Harrisburg, Danville, and Decatur.

Records for the 152 borrowers indicate that total additions to capital assets and to net worth were not greatly different in the two decades. Capital assets per farm increased in the war decade and the postwar decade by $16,500 and $20,000 respectively and net worth per farm increased something over $15,000 in both 10 year periods. Moreover, additions in acreage operated and in livestock operations rose by about the same increment in both periods.

In view of the widely different economic conditions existing in the two periods and the increased age of the operator, it is somewhat surprising that greater differences in capital accumulation did not occur. Apparently what has taken place is that in the early period, characterized by high income, capital accumulation took place primarily out of savings and the use of borrowed funds declined in importance. In the most recent decade, capital accumulation has continued but has been more dependent on borrowed funds.

This is illustrated in part by changes in average equity ratios. In the war decade equity ratios increased from 70 percent at the beginning of the period to 84 percent at the end. On the other hand, debts have expanded relative to total assets in the past 10 years and the average equity ratio was reduced to 81 per cent. Another factor tending to push capital accumulation to the same absolute gain as in the war decade has been the rise in land values. With all of the expansion in acres operated coming in the portion owned and with a persistent rise in land values throughout the period, capital accumulation has continued at a fairly constant annual rate despite unfavorable commodity price and income trends.

Factors Associated With the Different Rates of Capital Accumulation

This study suggests that among the many factors affecting capital accumulation, the amount of beginning assets, the structure of assets and the age of operator play an important role.

Table 2. Beginning Capital Assets and Subsequent Annual Increases in Capital Assets in the Postwar Decade

Beginning Capital Assets	Number of Borrowers	Avg. Beginning Assets	Avg. Funds Borrowed	Avg. Annual Increase in Capital Assets	Annual Increase over beginning capital (%)
Less than $10,000	41	$ 6,451	$ 3,092	$ 744	12
$10,000 to $19,999	42	14,500	4,202	1,629	11
$20,000 to $39,999	45	28,487	6,124	2,388	8
$40,000 and over	24	76,950	13,045	3,896	5
All	152	26,358	5,868	1,973	7

In order to examine the relationship between rates of capital accumulation and the beginning level of assets a tabulation was made relating the average annual increase in capital associated with various levels of assets in the postwar decade.

As beginning capital assets of the borrower increased, subsequent additions to the borrowers capital assets also increased but at a decreasing rate. This suggests that the capital status of an individual is an indicator of subsequent progress. That such a relationship shows up only attests to the fact that the greater the total bundle of resources farmers are able to control the larger income they are likely to have and the more financial progress they are likely to make. Among lenders, such as the F.H.A., who give considerable management advice, the relationship between beginning capital and subsequent progress may not be as great.

Perhaps more informative than the relationship between average beginning assets and subsequent gains is some indication of the frequency with which borrowers added $2,000 per year to their capital resources in the postwar decade. Fewer than 20 percent, one in five, of the borrowers with beginning capital assets of less than $10,000 added to their capital resources at a rate of $2,000 or more per year in the postwar decade. However, among borrowers with $10,000-30,000 of assets nearly 1 in 3 added to their assets at the rate of $2,000 per year. Among borrowers with even greater financial size more than half were able to make this kind of progress during the postwar decade.

At one association the sample

of long-time borrowers were divided into those accumulating capital faster than average in both decades and those who accumulated capital much slower. This comparison pointed out some of the differences in asset structure and the purpose for which credit was used. The rapid accumulators listed relatively larger amounts of feed, grain and production supplies than did the slow accumulators. Moreover farm real estate made up a smaller portion of their total assets. These data suggest the importance of having adequate amounts of operating and working capital before investing funds in real estate. All too often limited funds are used for the purchase of real estate while greater returns could be obtained by continuing to rent and building up adequate amounts of working capital.

This difference in the asset structure has still other implications. With working capital short, slow accumulators are likely to use much of their credit potential for operating expenses while rapid accumulators can use relatively more of their credit capacity for capital type loans. While difficulties are encountered in any attempt to classify credit by purpose, the relationship apparently existed particularly in the earlier periods. For example prior to War II and just after the war, nearly three-fifths of the credit used by rapid accumulators was for capital type purposes, among slow accumulators only about 45 per cent of the funds they obtained was identified with the financing of longer-life assets. In the most recent period the relationship does not exist but this may be due to changes in credit use as the age of the business increases.

The pattern of accumulation was also related to the age of the operator. Using as the base the age of operator in the prewar period, older operators, though starting with more resources, accumulated capital at a slower rate than younger operators, Table 3. Moreover while the middle aged group accumulated capital at a fast pace in the war decade, gains in the postwar decade occurred at

Table 3. The Capital Accumulation Pattern Varies With Age of Operator

Age of Operator	Prewar	Postwar	Recent	Prewar to Postwar Percent Change	Postwar to Recent Percent Change
	Average Farm Capital				
20-29	$5,555	$16,133	$44,689	+190	+177
30-49	7,396	21,284	41,450	+188	+ 95
50 and over	14,466	23,429	38,656	+ 62	+ 65

a much slower rate, probably reflecting the increased age of the operator.

The relationship noted here has been referred to by a number of people as the "cycle in farm value." However the cycle not only has implication regarding the importance of transferring going operations during the life of owner but it also suggests that lenders need to consider this relationship when making financial plans and projecting progress of the borrower.

In addition to the above factors an attempt was made to appraise the importance of the operators ability, the producing capacity of the farm and fortuitous circumstances such as inheritance, repeated crop failures, etc., which may have affected rates of accumulation. This was done by inspection of loan applications over the twenty year period, visiting with the field representatives and in some cases inspection of the farm. While it is difficult to adequately account for these items and weigh their importance, a few comments can be made.

Wherever it was possible each of the above characteristics were rated as contributing to accumulation or retarding accumulation. Among the rapid accumulators nearly two-thirds of the comments favored accumulation while among the slow accumulators only two-fifths of the comments favored accumulation. Real estate associated with the rapid accumulators was described as good more often than among the slow accumulators. It is interesting to note that for nearly one-third of the operators fortuitous circumstances were detected that materially affected rates of capital accumulation.

The data clearly suggest that financial progress is affected by a number of factors some of which are under the control of the farmer and some of which are beyond the operators control. While variations in financial progress are often disposed of by indicating that management ability is also variable, the data suggest that the economic age of the operator, amount of resources, the financial structure and extraneous factors also play an important role. In these circumstances lenders should have some obligation not only to provide adequate resources but to indicate desirable adjustments in the financial structure that will permit available labor and management to operate efficiently.

A man can't live a full and satisfying life until he is prepared to accept the unexpected as an opportunity instead of a possible source of trouble.

Chimney Smoke

by Irene Rudie

Give me the serenity, O Lord,
to accept what cannot be changed;
Give me the courage
to change what can be changed;
And give me the wisdom
to know one from the other.
—Author unknown

I never could see any sense in having no school on the birthdays of our national heroes. It seems to me the day could be well spent in studying the lives and ideals of these men, and in learning a few patriotic songs.

★ ★ ★

A housewife is a person who goes on a grand house-cleaning binge twice a year. She has herself a wonderful time splashing suds and paint around, rubbing wax and polish everywhere, and when she's too tired to do any more, she expects sympathy from the family!

★ ★ ★

Everyone has heard of a man who built a boat in his basement workshop and then couldn't get it out. A neighbor of ours built a house for ice-fishing in his basement; a good, solid, glued and screwed house, and then had to take it apart to get it out!

Friends of ours have a cat that understands o n l y Norwegian. Other friends have a big boxer dog that eats cigarette butts and only freshly-smoked and still-warm stubs will do for this mutt.

★ ★ ★

We will never know just how much higher that little antique table at the farm auction would have gone, if we had made just one more bid.

★ ★ ★

A little boy complained of a pain in his leg, so his mother said she would give him an aspirin. "You better give me two pills," he said, "because both of my legs hurt."

★ ★ ★

The old lady cats on this farm are pretty smart; they hide each new batch of kittens somewhere in the haymow and don't bring them down until they are too big and too cute to kill.

They Raise A Smell

The country's mint growers are an ingenious lot.

Condensed from Tractor Farming

Willard and *Elma Waltner*

POP a peppermint into your mouth. That refreshing mint flavor is the end result of some farmer's efforts—a man who is one of a small group raising and processing mint on farms in this country.

And this same stimulating mint taste can be experienced in such everyday products as spearmint chewing gum, peppermint-flavored ice cream, mint-flavored toothpaste, and medicine with mint added to mask the taste and make the kids beg for more. Even such things as shaving cream and cigarettes are cashing in on Americans' yen for that tingling mint sensation.

Popular Flavor

But, even as common and familiar as the flavor of mint is, the way the crop is produced and the small group of farmers who produce it are an interesting and somewhat mysterious part of American agriculture.

Altogether, there are less than a half dozen states where the two main kinds of natural mint—spearmint and peppermint—are grown. All the mint farmers in the nation farm only about 55,000 acres of the tasty crop. But on these relatively few acres they produce most of the world's supply. Oregon is the biggest producer, with Washington, Indiana, Michigan, and Wisconsin following in that order.

For a closer look at this unique farm crop, let's drop in on some typical mint farmers in one state —Wisconsin, where mint farming is relatively new. Here, west of Milwaukee around the colorful little town of Lake Mills in southern Wisconsin's Jefferson county, about five farmers operate most of the mint land in the state—some 5,000 acres.

It takes a special kind of land to grow the crop, a muck soil or a fertile sandy loam soil. The low

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Tractor Farming, published by International Harvester Co., 180 N Michigan Ave , Chicago 1, Ill.

muckland around Lake Mills was always considered worthless by upland farmers; but when mint farmers first came here in 1946, they knew it was just the thing for growing their fragrant, tooth-sweetening crop.

These mint fields of Wisconsin are a good place to get a look at the ingenuity of the American farmer. Like a few other highly specialized types of farming, some of the equipment needed to raise this exotic crop is not on the market. Commercial production of such machines needed in such limited numbers is just not practical. So, these farmers—with the help of local machine shops, welders, and machinery dealers—have taken existing machines and built their own.

Sheep show an especial fondness for salt and consume more per 100 lb. live weight than cattle.

"The winter months around here are used for designing and building equipment," says Everett Borck, local IH dealer. "The merits of the different 'inventions' furnish a topic of conversation throughout the whole winter season when farmers get together," he says. "And each farmer naturally believes his 'invention' is the best.

"But if one man devises something that works especially well or works out a new practical method of handling the others are quick to adopt it," Borck adds.

One good example of how ingenious these mint farmers can be is the case of the root stock planter. Planting was for a long time a job to be done by hand. Many laborers were needed to walk the long rows and stick the pieces of mint root into the ground. (Although the plant is a perennial, it is often necessary to replant for various reasons.)

But two brothers in the mint raising business together, Jim and Edmund Long, did some figuring and some looking around for a piece of machinery as a starting point and came up with a highly efficient planter.

Replacing Labor

They started with a McCormick manure spreader. They installed a false bottom over the apron and two side compartments running the length of the spreader box, leaving the apron exposed in these two side compartments. To plant, they fill the center compartment with roots, and one man stands on the false bottom and forks the roots into the two side compartments where the moving apron can carry them back and drop them into furrows. The furrows themselves are opened and covered by special attachments on

the same machine. All this in one trip over the field.

The Long brothers' invention can plant as much in a day as 25 men formerly planted by hand!

Mint farming is one business where it is perfectly legal to operate a still. (Though these mint processing stills, like all others, must be registered with the Internal Revenue Service,) Distillation is the method used for getting the precious mint oil from the leaves. The oil is the "cash crop" of these farmers.

And, like the field machines, the distilling machinery comes in for its share of "inventing," too. Commercial boilers are used as is, but beyond that each farmer pretty well designs and builds his own still.

After the mature crop is mowed, using a standard mowing machine with guards removed, it is allowed to wilt, then windrowed. It is picked up with a loading machine and packed into giant tubs or special wagons for steaming.

The oil is removed from the leaves by passing steam through the herb, thereby vaporizing the oil. The steam and oil vapors pass through the condenser, turning them into water and oil. The water and oil are collected into receiving vessels where they separate into layers with the oil floating off into other receptacles. After about 45 minutes in this king-size pressure cooker, the mint plants have been converted into a worthless mass of vegetation called "cheese" in this area. And the oil is ready for sale.

But mint farming is not all sweet aromas. The crop is subject to numerous hazards. Among attackers of spearmint and peppermint are wilt, rust, nematodes, and scores of insect pests.

One kind of disease can render mint land unfit for mint farming. This has happened to some areas, forcing mint farmers to move out, because their plants would no longer thrive. So, if you are visiting a mint farm and are asked to change your shoes before entering a field, don't be surprised. The farmer is only trying to avoid any chance of soil contamination, just in case you might have been on some other mint farm that has the disease.

Rats are known carriers of several important diseases of man and animals. These diseases include: leptosperosis, salmonellois, trichinosis, murine, typhus fever, bubonic plague, rabies, and tularemia.

Earthbound Airplanes

And if you happen to be around Lake Mills some evening when frost is threatening to settle

on the bogs, and you suddenly hear what you think is a low-flying airplane coming at you, don't be s t a r t l e d too much. Look around and you'll probably see a farmer on a tractor pulling a trailer. Mounted on the trailer will be a roaring airplane engine complete with propeller. This is the way these farmers have of keeping the air in motion over their tender plants to keep frost away. And it's not uncommon for this din to last several nights in a row—just as long as there is any threat of frost.

Even with all the hazards that constantly plague their delicate crops, these extraordinary farmers are firmly convinced that theirs is the most satisfying type of farming. Others might argue that point, of course, but certainly no one would dispute that it is about the most *fragrant* type of farming to be found!

How To Figure The Cost Per Pound Of Nitrogen

The protein supplement to buy is that which is cheapest *per pound of protein,* says W. Y. Fowler, extension economist, New Mexico State University.

How do you figure what a pound of protein is costing you? All analysis given on a feed tag is on the basis of a hundred pounds. Thus, if a protein supplement such as cottonseed meal is listed as 41%, this means there are at least 41 pounds of crude protein in each 100 pound sack. A 22% range cube-feed means there are 22 pounds of protein in each 100 pounds.

Now let's arrive at the cost per pound of protein in these protein supplements: 41% cottonseed meal is selling for about $60 a ton or $3/cwt. If you divide $3.00 by 41 pounds of protein in this 100 pounds, you get about 7.3c as the cost of a pound of protein. This is what you are paying for protein. Now let's look at the 22% range cube-feed. Suppose it is costing about $54 per ton or $2.70/cwt. Remember there are 22 pounds of protein in this 100 pound sack. Divide the $2.70 by the 22 pounds and you find that a pound of protein is costing you about $12.3c. You are still interested in buying protein!

Fowler says to watch the market for drops and buy your year's needs on any sharp break down in the market price. This saving will help in decreasing your costs of producing a pound of gain.

—New Mexico State University

Seed Treating Chemicals

The nature and function of these important chemicals for better crop seed . . .

Condensed from Agricultural News Letter

T. C. Ryker, Ph. D., Industrial Biochemist

SEED treatment — once an on-the-farm function—has now become an integral part of commercial seed processing.

This has assured greater uniformity of treatment and the application of more specialized techniques to special problems. But, this shift in responsibility has often made farmers less aware of their own special needs and has sometimes resulted in farmer acceptance of a treatment which may not have been the best for his particular problem. A general knowledge of seed treating materials and what they can do is, therefore, important in obtaining maximum productive efficiency out of the soil. The three major classes of treatment are organic mercurials, non-mercurials, and insecticides.

Organic Mercurials

The organic mercurials both disinfect and protect. They are used on seed not easily injured where disinfection is necessary or difficult. The volatile mercurials through their fume action serve two important functions: They contact all the seed surfaces, including underhull parts, to completely disinfect, and they are absorbed by seed surfaces as a complete retentive coating of the seed parts when the seed is planted. To obtain the full benefits of this volatility, treated seeds should be held at least 24 hours before planting. With longer storage, disinfection may be obtained with reduced dosage, but some protection is sacrificed. The fume action is not so important on wheat because its smooth coat is easily covered, but is essential for rough-coated barley, loose-hulled oats, and the linty surface of cotton.

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Agricultural News Letter, E. I. DuPont De Nemours & Co., Inc., Wilmington 98, Delaware

Precautions Recommended

In general, mercurials are recommended for small grains, flax, cotton, and safflower. Proper dosage is critical. Over-treatment may result in seed injury. Under-treatment may fail to adequately control disease. Seeds thoroughly cured, dried, and properly treated can be safely stored if these precautions are taken: (1) Insure good storage conditions since high temperatures and moisture favor seed deterioration and chemical injury. (2) Give particular care to treating. While there is roughly a 100 per cent margin of seed safety, injury is possible from overdosage or poor distribution of the chemical. Over-treatment cannot be removed by washing, because the mercury is absorbed by the seed coats. (3) Avoid mechanical injury to seed. It favors treatment injury, particularly when seed is initially stored under high temperature. Wheat injury can occur in thrashing (too high cylinder speed), resulting in skin breaks over the germ. Delaying treatment until cool weather permits safe treatment of such seed. Too severe debearding of oats causes treatment injury. Frosted seeds are more susceptible to mercury injury than sound seed. (4) Treated seed should not be held in air-tight storage. The normal methods of handling —open bins, sacks, and paper bags—are safe.

Maybe one reason we miss so many opportunities is that they always look bigger going than coming.

Non-Mercurials

The non-mercurial "protectants," based on chemicals such as thiram, captan, and chlorinil, are generally used for corn sorghum, field beans and peas, vegetables, peanuts, grasses, and small-seeded legumes. Both mercurials and non-mercurials may be used on sorghum, rice, and acid-delinted cotton seeds. Protectant effectiveness depends on complete coverage and higher dosages are generally required than for the volatile organics. The protectants have the advantage of an extremely wide margin of safety and lower health hazards. Treating rates may be adjusted to seeds' needs and to the expected severity of the planting conditions. There are no special storage requirements.

Certain other non-mercurials are used for special purposes on some of the crops normally treated with a mercurial. Copper carbonate controls stinking smut of wheat and kernel smut of sorghum, but has little seed protectant value. Hexachlorobenzene is a specific for stinking smut or

bunt of wheat; but is not effective against the smuts of barley and oats and has little protectant value.

Insecticides

Insecticides are finding increasing use in seed treating. These may be merchandised in combination with the fungicide, as distinct products for individual use, or combined with the fungicide in the treating process. Uses include: Protection from storage insects, particularly various cereal crop seeds; from certain soil insects that attack the seed and germinating seedling, particularly sorghum, corn, beans, and vine crop seeds; and, protection of the growing plant through systemic action, such as with certain organic phosphates on cotton. The use of insecticides alone or with mercurials require special precautions for seed safety.

Guideposts For The Commercial Egg Farm

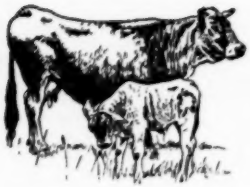
1. *Production Objectives*
   - A. 240 eggs per bird based on pullets housed.
   - B. No layers over 20 months of age.
   - C. Days to 50% production — 180.
2. *Mortality Objectives*
   - A. Day-old to 5 months of age — 5%.
   - B. Laying House Mortality — 10%.
3. *Feeding Objectives*
   - A. Growing stock — 20 lbs. per bird to 5 months of age.
   - B. Laying stock — 84 lbs. for 12 months.
   - C. Feed conversion — 4 lbs. per dozen.
4. *Marketing Objectives*
   - A. Egg size — Pullet Flock

Extra large	20%
Large	50%
Medium	25%
Pullet and Other	5%
	100%

   - B. *On Farm Egg Breakage* — not over 3%.

—New Jersey Agriculture

Good Calving Practices



"Don't pull too soon — go to bed instead." With a big calf, a heifer may take 12 hours to complete delivery . . .

Condensed from Farmer and Stock Breeder

WHILE inside the cow the calf receives its nourishment and life from the mother via the navel cord; it does not start to use its own lungs for breathing until the cord ruptures, and this rarely occurs until the calf's head is well outside.

The intermittent heaving of labor is designed by nature to maintain the navel supply—prolonged, premature pulling causes excessively long pressure on the cord and cuts off the calf's lifeline.

Naturally, the inevitable question in the minds of all stockmen, and one which I am often asked, is—just how long can the heifer or cow be safely left in labor? The answer is until they have calved or nearly calved, or until natural progress ceases.

This final stage in delivery averages from half to two hours in a cow, and one to four hours in a heifer, but with a big calf the heifer may take up to twelve hours to complete delivery. Don't panic, but please don't worry about the calf.

When progress does cease and assistance has to be given, then no more than one man, and one man only, should ever be allowed to pull on the ropes, and then only when the animal strains: if both legs are roped then one leg only should be pulled at a time. If two people are allowed to assist then they must do so only under strict veterinary supervision.

I and my colleagues have proved many times that in most of the few cases where nature fails, one man and patience can calve the tightest and most difficult case.

Excess traction is permissable only when the calf is dead and putrefying—because then the rotten calf will stretch and give before the cervix will tear.

Technically labor is never fully completed until the afterbirth is passed, but for our purpose we

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Farmer & Stock-Breeder, Dorset House, Stamford Street, London, S. E. 1

can disregard the passing of the afterbirth because in cattle it is often retained without apparent distress.

I realize only too well how very important it is for stockmen to know with complete confidence exactly when and how long to leave the patient; and when to seek professional advice; and when and how to assist. It is impossible to completely generalize, but the routine measures I advise are these.

If nothing is showing after a period of intensive straining, say two hours in a cow and four hours in a heifer, the farmer or stockman should examine for presentation. He should wash his hands and arms thoroughly with soap, warm water and antiseptic, and wash the heifer or cow's vulva and perineal region.

He should also strip off his shirt for the job since asepsis is vital, and he may well have to insert the arm right up to the shoulder, taking great care not to rupture the water bladder. If the presentation is wrong, i.e., if two feet and a head cannot be felt, then a Veterinary Surgeon should be consulted at once. If, however, the calf's head and forelegs are there, then the stockman can relax.

If it is during the winter, and no loose-box is immediately available, the neighboring cow should be accommodated elsewhere, the entire floor area of the stall should be sprinkled with sand or grit underneath the bedding, and the patient carefully but loosely tied with a single link of string in the chain.

The ideal, however, is for the patient to be put in a loose-box, the floor of which has been covered over with sand or grit underneath the bedding. Permanent paralysis after calving is nearly always due to broken or damaged pelvises or hip joints directly caused by slipping about on a greasy floor during labor. Bedding is not enough—the floor underneath must be completely nonskid. If it is nighttime, both the farmer and the stockman should go to bed.

In 1939, U.S. farmers produced 2.5 billion bushels of corn on 88 million acres. In 1959, they produced 70 percent more corn on 4 percent fewer acres.

If the animal is outside in the spring or summer, then, after examination, she should be turned away and left to calve outside.

And now to deal more precisely with the next time factor—just how long can the patient now be safely left before doing something about it. Well, if the calving is not completed within the twelve

hours (i.e., by the following morning if you have left the patient overnight)—then the Veterinary Surgeon should be called in. He will decide whether to assist or whether to leave her to her own devices for a further period, depending on the progress made.

However, there are occasions when a keen practical farmer or stockman can detect the cessation of progress in the birth, and can intelligently assist by himself.

New Uses For Starch May Help Reduce Surpluses

Reduction of food supplies through new industrial uses of starches may result from research under way at the University of Minnesota. Progress in the project, which involves "remodelling" of corn starch molecules, was reported by Fred Smith, University biochemist.

Smith explained that heating corn starch either alone or with a small amount of an acidic substance brings about what is called dextrinization to produce compounds with gum-like properties. Compounds of this type are now used on a vast scale in the adhesive, mining and textile industries.

The University researcher traced the discovery of this gum back to a fire in an Irish starch plant in 1821. The fire roasted the starch, and when water was poured on the flames the result was a gum which was found useful for such things as sealing envelopes.

Until University of Minnesota researchers began recent investigations, however, no one knew exactly what chemical changes occurred during the roasting process.

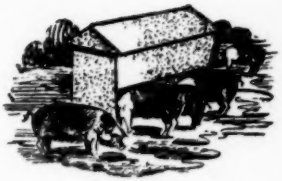
When various compounds are mixed with the corn starch during dextrinization, it was found the added compound forms an integral part of the remodelled corn starch molecule, resulting in a variety of entirely new substances. They are the forerunners of new types of adhesives which may prove to be the beginnings of a new industry based on starch.

What can be done with starch from corn can also be done with starches from potatoes, wheat and other crops which are in surplus as foods.

University researchers hope their efforts will directly result in, or stimulate industry to find, new chemical uses for starch.

—University of Minnesota

Lean Hogs From A High-Fiber, Low Energy Ration



Efficient and economical gains from a diet high in corncob meal . . .

Condensed from
Agricultural Research

NATIONWIDE efforts to slim down overly fat hogs have led us into many lines of genetic and nutritional work to help us do the job effectively.

One of the most recent is a USDA-supported study which has shown the usefulness of high-fiber, low-energy diets in producing lean hogs that gain efficiently and economically.

Preliminary results of the first experiment showed that pigs fed corncob meal as the source of fiber did unusually well. If the level of fiber in succeeding experiments proves to be more important than the source, then rations based on corncobs may be used to improve both carcass quality and economy of production.

These nutritional studies are being conducted by nutritionist J. A. Hoefer of the Michigan Agricultural Experiment Station at East Lansing, under contract with Agricultural Research Service.

Hoefer is trying to develop rations that can produce gains that will go into lean instead of fat-tissues. Feed that pigs get is used first for maintenance, then for growth and fattening. Unfortunately, too many pigs produce too much of their weight gains in the form of fat when full-fed. Hoefer's solution is to full-feed pigs on a high-energy ration up to 125 pounds—most weight gains up to this time go into growth—then restrict energy intake by increasing fiber content until market weight.

Fiber Sources Were Compared

In the tests, 42 weanling pigs were full-fed a high-energy basal diet until they reached 125 pounds. The pigs were then divided into six groups. Five of the groups were placed on a diet high in one fiber—barley, oats, wheat bran, alfalfa, or corncob meal. The sixth group was a control group that continued on the same diet as before. All fiber-containing rations were essentially equal in

Reprinted from Agricultural Research, Agricultural Research Service, Washington 25, D. C.

protein, TDN (total digestible nutrients), and fiber content. This allowed for a direct comparison of fiber sources. Pigs were slaughtered when they reached approximately 210 pounds and complete carcass data were obtained.

Corncob Ration Slightly Better

Animals on corncob meal did surprisingly well on all counts. They gained 1.29 pounds daily and averaged 4.30 pounds of feed per pound of gain for a feed cost of $10.15 per 100 pounds of gain.

Most important, these pigs yielded more lean cuts—54.65 percent—than any control or test animals.

The animals fed barley as their fiber source did well, too (although barley is higher in energy than the other fibers). But they yielded only 52.63 percent lean cuts.

The highest gaining pigs were the control animals kept on the high-energy corn diet. Feed costs were up, though, averaging $10.52 per 100 pounds of gain. Yields of lean cuts averaged only 51.20 percent.

More Feeding Trials Planned

Although the tests so far show that corncob meal has promise as an economical and useful source of fiber for hog feeds, Hoefer points out that it's still too early to judge its longterm effectiveness.

These studies—and many others throughout the country— reflect growing consumer interest in lean pork. Producers are interested because they have found that it takes less feed to produce a pound of lean than a pound of fat. Both nutritional and genetic changes will be necessary to bring about the meat-type pig. Although genetic improvements are more permanent, they take longer to produce the desired results. Nutritional changes, on the other hand, produce almost immediate results.

If you haven't been too concerned about your layers' supply of calcium, maybe you'd better look at this report from the 1958-59 N. J. Random Sample Laying Test. There were 1250 birds in the test, representing 25 different strains. During the 10 months of the test the birds that received extra calcium averaged 197.84 eggs per bird. Those that didn't get it averaged only 190.53 eggs per bird.

In addition, the birds that got the calcium needed .13 of a pound less feed to produce a dozen eggs. They ate an average of 2.16 pounds of calcium per bird during the test.

—Everybody's Poultry Magazine

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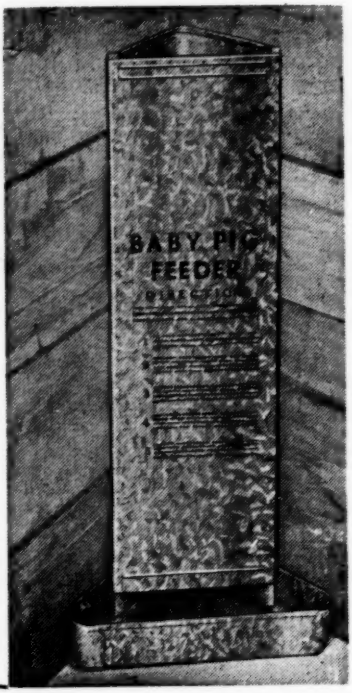

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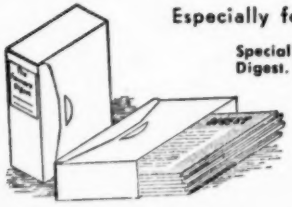

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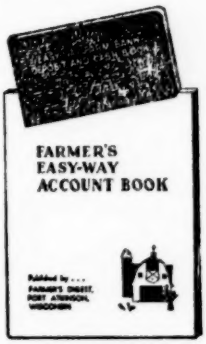

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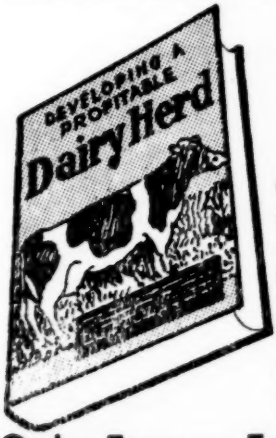

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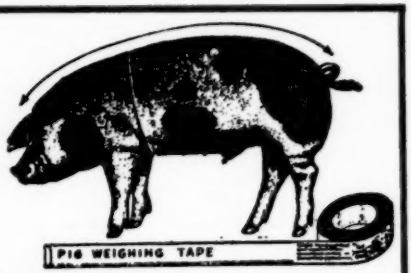

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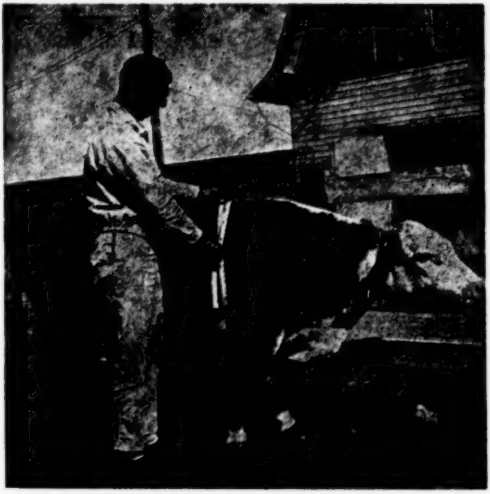

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